

# COAL AGE

Vol. 12

NEW YORK, NOVEMBER 3, 1917

No. 18

## ENLIST—Be a Six-Day Workman

By a Coal Miner



TODAY I stayed out of my working place to see a famous American aviator loop the loop, do spirals and otherwise outvie the birds of the air. It was my first day out of the mine since America declared war on Germany. On the day we entered the big conflict I told my wife that since I was too old to go to war, my bit would be to mine all the coal I could—my country would need it.

But I've been reading of how aviators, in order to properly serve their country by clearing the air of enemy carrion (to me that seems a good name for birdmen who drop bombs on defenseless children and Red Cross nurses), must learn to excel the birds in their element. I just had to see how it was done.

### *I Was Shot Through with a Sudden Thrill*

I FELT just like I did the day my foreman heard a gas explosion in a room where two of his men were working and rushed in to what all of us thought was sure death, to try and save them. Somehow I did not see so much the firing line as I did the needs here at home. There are plenty of men who want to go across, and will; but every man can ENLIST here at home. I thought that more than any other man the coal miner can enlist wholeheartedly in the way of serving the needs of the nation. If a woman can so unreservedly offer herself and take such daring chances, shall any coal miner who cannot go across refuse to enlist his whole energies for his country's need?

America needs coal, so here's one miner's message to his fellow workmen:

Let us enlist today as American coal miners. Let us be done with talking strikes for higher wages—when we are getting more for our coal than we ever got before—just

Today I saw it; but I saw far more than that—in fact I got a vision.

The aviator I saw is a woman. They tell me that she does not like to be called an aviatrix or aviatrix—whatever it is; for she can do all that any aviator dares. As I watched her being strapped to the seat in front of her plane, and as I heard people around me say she was going to France soon to do what she could "Over There," I thought of how most women are still afraid of mice.

Then the motor began to roar, the mechanics let go, and the machine took to the air. As it rose in great circles, there suddenly appeared underneath it in gigantic letters the single word—ENLIST.

because a terrible need for our product exists. Let us have no part in shutting down mines to discuss the need for unionizing, just because we think that no better time for this will ever come to us. From now on, we should be interested only in doing our straightforward duty as coal miners—and send out all the coal we can.

From this time on let us be six-day miners. The sight of a woman flying for America, risking her life to interest the men of America in their duty, will brand as slackers those of us who know how to dig coal but won't, in order to haggle over temporary benefits. The finest feeling that we Americans can have right now is to know that we are serving our country. Duty to country is a higher thing than personal gain. After all, the public is the final judge of the merits of any demands we make, and there has never been a strike yet that was not finally settled at the bar of public opinion. If we do our part now, we can get all we deserve later on.

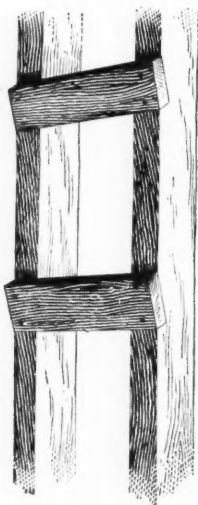
### *Coal Miners of America—Enlist!*

There is no greater reward for the performance of duty than the joy of doing it. Let there be no slackers in the ranks of the American coal miner!

## Ideas and Suggestions

### Ladder Design for Steep Workings

Where timbers must be hauled up a steep working through the manway, the nuisance of timbers catching on the ladder rungs can be eliminated by setting in the rungs as shown in the drawing. Rungs set in this man-



CONVENIENT MINE LADDER

ner are not weakened for man climbing, but care must be exercised in sending the ladders into the mine so that they will not be put into place upside down. With such ladders, timbers may be easily hauled over inclined as well as vertical ladderways.—*Engineering and Mining Journal*.

### Why Wait Two Years?

Confronted by a shortage of labor, and naturally a scarcity of coal, the anthracite operators of the State of Pennsylvania desire to have a state statute which restricts the labor supply and hampers its operations set aside for the duration of the war. This statute requires that no man can act as a miner in an anthracite mine till he has been employed for two years as a laborer and received a certificate of competency. I believe that it would be well to annul this piece of legislature for the duration of the war.

Were it not for the existing laws, an operator could take a raw recruit and make a miner out of him in three months' time. The United States army has removed some of its drastic requirements in respect to the certification of its officers, if the expression may be pardoned, for where it formerly required four years of study and practice at West Point to graduate as a second lieutenant, now war officers as high in rank as major have been made by three months of intensive study and drill.

The law, of course, cannot be set aside except by an act of the legislature, unless the National Government

usurp the power through the law of necessity on the ground of home defense. Then, again, it may be that the United Mine Workers' organization will hardly favor the repeal of the two-year law, but they might consent to it for the term of the war for patriotic reasons, in order that men trained in mining classes might fill up the gaps in the ranks after three months' training. I believe the suggestion should be given serious consideration.

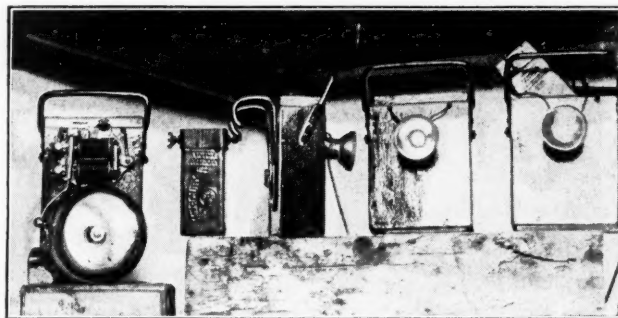
### Safety Trip-Alarms and Lights

BY FRANK HUSKINSON  
Delagua, Colorado

When a trip of cars is being pushed by a locomotive, pulled by a rope, or lowered down a slope, a continuously ringing bell and a red light on the front end of the trip is an efficient alarm to warn people off the tracks. Several such gongs and trip lights are manufactured and are on the market today.

Some time ago I was appointed a member of the safety committee at the mines of the Victor-American Fuel Co., Delagua, Colo. Realizing the necessity of a suitable "visual" as well as audible warning signal on the trips of cars going up and down the slope, since this same passage is also used as a manway, I made up several trip lights and bells. These are shown in the accompanying illustration.

For the trip lamps, I had a strong wooden box made sufficiently large to hold a one-cell two-volt storage battery. This box is fitted with a suitable hanger iron and can be easily hung on the front or rear end of the mine cars, and it also has an iron handle for convenience in placing it on and taking it off the cars. The lamps as well as the storage batteries are built from a type of miners' head lamp that has been discarded, in preference



STORAGE-BATTERY ALARMS AND LIGHTS

to using the more up-to-date Edison miners' safety head lamp. This lamp is fastened to the front of the box, and the globe is colored red. The whole makes an effective "visual" signal on the trips and can be seen at an extremely long distance.

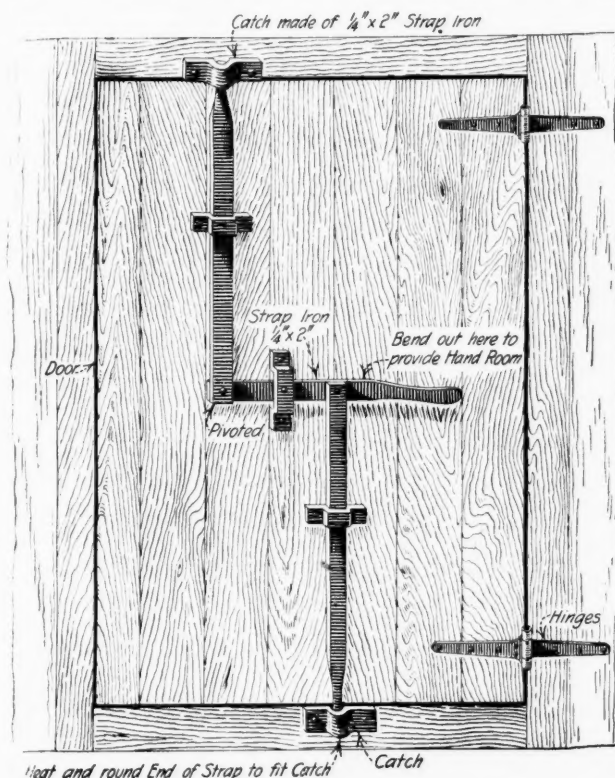
The bell is arranged like the lamp, the same battery and the same size and style of box and hanger irons

being used. The bell proper is an ordinary 6-in. electric gong, and it has been found to operate satisfactorily on the one cell.

The combination of a red light and a continuously ringing bell makes an efficient visible and audible warning signal for use on the front ends of the trips and complies with the requirements of the law in regard to a suitable warning device to be used on moving trips in a coal mine.

## Fastener for Large Doors

The accompanying sketch shows a strong, reliable fastener for heavy wooden doors. It can be operated with one hand without reaching above the head or



FASTENER FOR UNDERGROUND DOOR

bending down to operate the necessary levers or catches and can be made and installed by any blacksmith or handy shop man in a short time. This door fastener is a good one and will give excellent service.—*Engineering and Mining Journal*.

## Power Conservation Underground

BY JOHN WOODALL

Allegheny River Mining Co., Conifer, Penn.

Much power is being wasted inside coal mines today. While this may not be true of all mines, there are but few that can refute this assertion. Many of the large coal corporations have economized in power generation by dismantling their numerous small profit-eating power plants and generating their power at central power stations. In the building of these large plants, efficiency and fuel economy were the chief points taken into consideration.

Power consumption, I believe, receives less attention from the average mine official than does many of the matters to which he must give thought and attention, and yet the saving that may be effected by close supervision will often equal the amount of an efficient official's salary. To fill this rôle with success, he must have a knowledge of the principles of electric power transmission and should know and keep in view at all times the importance of maintaining efficient transmission.

There are many leaks that can be stopped, at least partially. This applies more especially to electricity, probably because the leaks are not so glaring to the average man as would be the case if a leak of the same proportion were blowing from a defective steam or compressed-air pipe. If a pump using compressed air is running twice as fast as is necessary to keep water from working places, the average mine worker would know enough to close the valve a little and cut off some of the air; but if a motorman or machine runner was working on an electric circuit where the carrying capacity was inadequate, there will be small complaint so long as the work could be accomplished. If he could not get the voltage, he would use up the amperes.

Machine runners can save much power by keeping good sharp bits in the cutting chain. This is more apparent to an old miner who has used a hand pick. You could not get him to use a pick with the cutting edge worn off, he knows it requires too much power behind the handle. Some machine runners have a bad habit of running the machine across the face over a rough bottom without using a skid. It takes much more power to haul a machine across the face of a room when a skid is not used.

Again, with haulage, there often exist opportunities to save power by a careful rearrangement of trips so that each motor will get a proper number of cars for each trip. No more trips should be made with a motor than is necessary to haul the cars. For instance, if a motor can haul 150 cars in five trips, without being overloaded, it would be a waste of power to make six trips to haul the same number of cars. With every trip made there is the weight of the motor to be hauled. This is generally equal to the weight of five or six loaded cars, and with a haul of five miles or more considerable power is consumed.

A close study of the problem of handling water in mines will often disclose some means by which the work of a pump can be dispensed with. In some instances, by judicious ditching and the building of a few dams at local points, a considerable amount of power can be saved. If sufficient transmission wires are used, electricity is much more economical than compressed air when used for operating pumps. As a rule, the pumpman has a number of pumps under his charge, and these are sometimes located one or two miles apart. If he should misjudge the capacity of a pump operated by compressed air, and in his absence the sump became emptied, the pump would run away, causing a considerable waste of power. An electrically operated pump under similar conditions would simply use enough power to keep it in motion.

In this time of coal scarcity let us remember that a ton of coal saved from the boiler furnace is another ton of coal for the railroad cars.



# Coal Mine Shop Equipment

By R. M. MAGRAW

General Superintendent, United States Fuel Co., Hiawatha, Utah

**SYNOPSIS**—*The stocking of spare machine parts against the time of breakdown is an expensive and unsatisfactory policy. It is better to provide facilities for making repairs promptly as they are needed. Certain pieces of equipment have paid phenomenal returns on their cost.*

IT IS probable that never before in the history of coal mining has it been so difficult to secure material and repair parts required by the various phases of the operations as at the present time. The increased demands on the industry have necessitated the opening of many new mines, the reopening of old ones and the rehabilitation of those already in operation, with the result that the manufacturers of mining equipment have been swamped with an unprecedented influx of business; and while, in most instances, manufacturers have made every effort to take care of their old customers, it cannot be gainsaid that many serious delays, with consequent curtailment of output and loss of revenue, have resulted from the failure to secure some essential machine or repair part on time.

Continuous operation of the plants, necessitating hurried or temporary repairs, and the shortage of skilled labor to handle the repairs make the question of upkeep one of serious moment. It is not always possible to foresee points of weakness and to have duplicate parts on hand. In fact, to keep duplicate repair parts of all the heterogeneous equipment usually found at the present up-to-date coal mine is a financial as well as a physical impossibility. It therefore behooves the

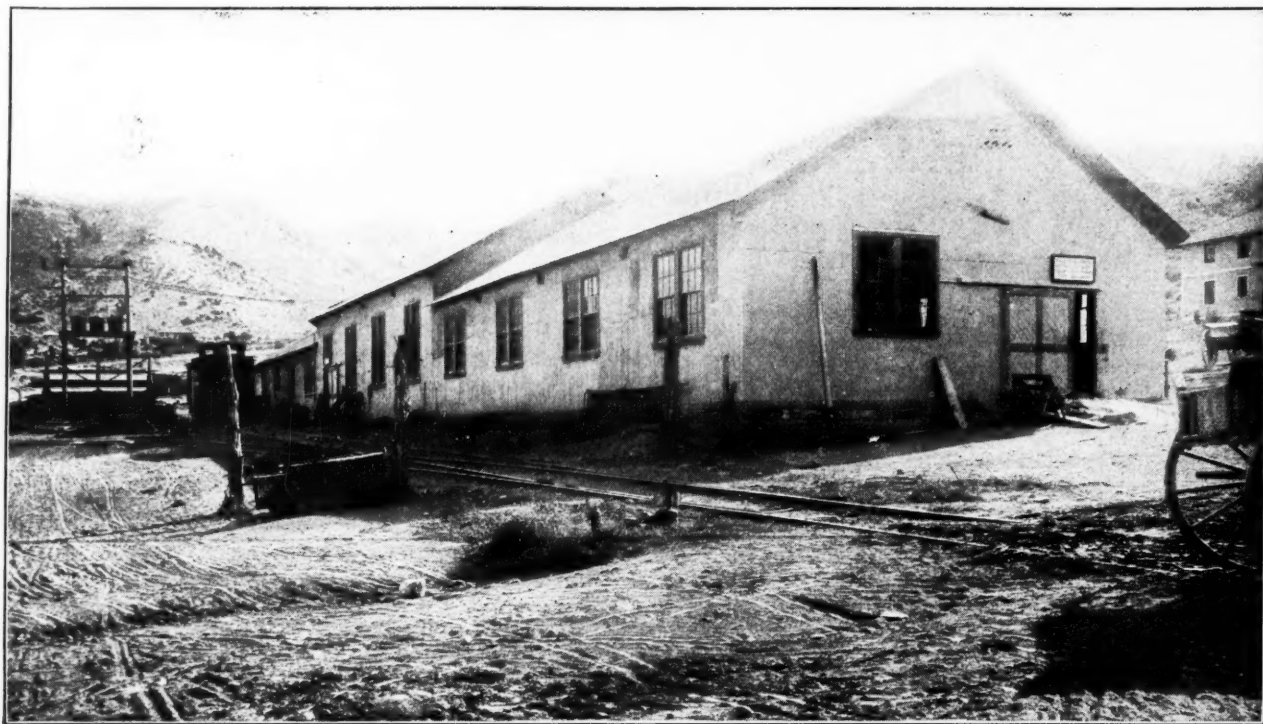
operating official to be in a position, as never before, to make repairs on the ground, permanent if possible, temporary if they must be so, in order to keep up his production of one of the prime essentials of these strenuous times.

A few years ago the average coal mine used few mechanical appliances. Pick mining, mule haulage, bar screens and other early practices were the order of the day; hence the shop was more or less of a haphazard affair. Most of us can visualize shops of a bygone age, and not a few of us can still see them from our office windows as monuments to inefficiency.

The usual type was, or is, a sheet-iron structure, about 16 by 20 or 30 ft., with roof eaten through by fumes from the forge, which with an anvil, "Armstrong" press drill and perchance an eccentric grindstone, constituted the full equipment.

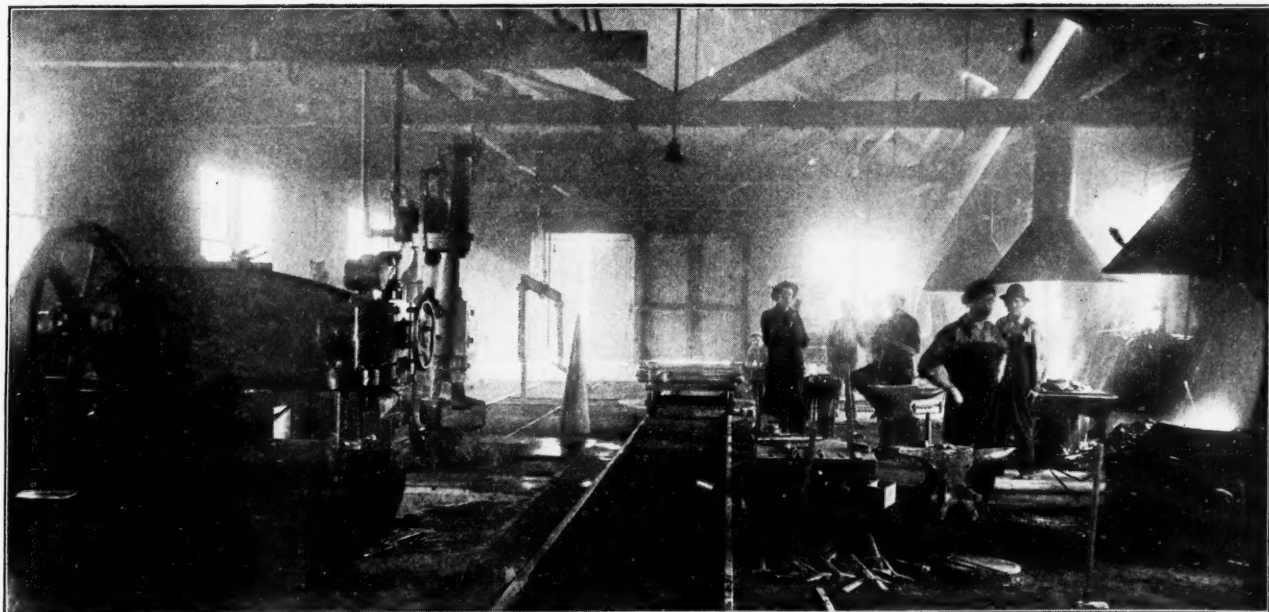
As mechanical mining and haulage equipment came into vogue, replacing in a large measure hand mining and mule haulage, so came the modern tippie with its massive shaking screens, box-car loaders, car hauls, crushers, rescreening plants, etc., to replace the old bar-screen plant and the tippie with practically no mechanical device.

At many mines, after the installation of modern equipment, it was the custom to purchase all repair parts from the manufacturer, and an effort was made to keep on hand duplicates of all parts showing a tendency to break or otherwise cause trouble. In the event of a breakdown occurring when no repair part was at hand, frantic use of the telephone and telegraph wires was resorted to, the manufacturer was implored to rush shipment by express, and the broken unit and



CENTRAL REPAIR SHOP OF THE UNITED STATES FUEL CO., OF HIAWATHA, UTAH





INTERIOR OF THE BLACKSMITH SHOP, SHOWING FORGES, SHEAR AND HAMMER

possibly the entire plant was laid idle *ad interim*. Probably the broken part could have been turned out in short order had facilities been at hand.

A better era seems to be dawning, however, and for several years past most of the larger corporations and quite a few of the smaller ones have been displaying a tendency to build and equip modern repair shops, although a great many are still deterred by a mistaken idea as to the first cost of the class of equipment necessary for a satisfactory coal-mine shop, without giving any consideration to ultimate economies in operation to be derived from the proper use of such a shop. The ability to make repairs in many instances at the place of accident without dismantling the machine, thus avoiding numerous shutdowns, will in a short time effect savings sufficient to build and equip a modern shop.

Where several mines are owned by the same company and located in the same district close to each other, a central shop, with smaller ones for each individual plant, is sometimes desirable. The advantage of centralizing expert mechanics in a well-equipped and well-lighted shop are obvious.

The following is a description of such a shop serving four plants with combined capacities of several thousand tons per day:

This shop is located at the central plant of three, which are in close proximity to each other. Its construction made possible the elimination of two small, poorly equipped shops at the central plant and of one shop at each of the other plants. The total number of shopmen was reduced and greater efficiency was secured, because of the closer supervision made possible by concentration, the more modern tools employed and the lighter and more sanitary building. Outside dimensions of the building, which is of straightline construction, are 36 x 212 ft. This is divided into four departments: Carpenter shop, 36 x 31 ft.; electrical shop, 36 x 32 ft.; machine shop, 36 x 64 ft., and blacksmith shop, 36 x 85 feet.

The building is of frame construction covered by No. 18 gage sheet iron, which is protected from corrosion

by special graphite paint. The roof is supported by trusses, spaced on 16-ft. centers, with purlins spaced on 4-ft. centers; the clearance in the machine shop is 14 ft. and in other departments 10 feet.

A mine track is brought through the center of all shops to the door dividing the carpenter from the electrical shop. This track was not extended into the carpenter shop, as all car repairs are made in the blacksmith department.

A railroad track parallels the building throughout its full length, a standard clearance of 8 ft., as required by safety provision, being maintained. Cranes for unloading heavy material brought in from other mines are located at entrances to the machine and blacksmith shops.

Prices of machine tools show such a variance, owing to a number of causes, that no attempt will be made to specify them here, except in a few instances, and then only approximately and under conditions existing two years ago.

The carpenter shop is equipped with a swing cutoff saw, 18 in. in diameter, with extra miter tooth saw for finished work; a bandsaw, with saws ranging from  $\frac{1}{4}$  to 1 in. in width; a planer without attachments (a more modern type of planer would be desirable, however); a rip saw with tilting table and set of saws from 8 to 16 in. in diameter for coarse or finished work, as required; a wood lathe with 16-in. swing and 12-ft. bed, the latter having been constructed from 40-lb. rail; a power-driven grindstone; an emery wheel for saw and tool sharpening; a post drill for wood boring. A work bench and tool lockers complete this equipment.

Guards are placed over all saws and substantial pipe railings surround moving belts wherever these approach the floor. With the exception of the planer, which was rescued from the scrap heap and placed in repair, the entire equipment in the shop was purchased and installed for less than \$600.

The guard over the rip saw was devised by one of the employees after he had received a severe cut, and as it is believed to be unusual enough to warrant mention, a description will be attempted. A  $\frac{3}{4}$ -in. shaft, 18 in. long,

is attached perpendicularly to the side of the saw table by studs, thus permitting the table to be tilted without disturbing the relation of the guard to the saw. A piece of 1½-in. square iron about 4 in. long with one ¾-in. and one ½-in. hole drilled at right angles to each other is then placed on this upright and secured by setscrews. An ordinary segmental saw guard is attached by rivets to a ½-in. rod of sufficient length to permit of adjustment, and the rod is passed through the hole in the block mentioned above, where it also is secured by setscrews. The guard can be adjusted by movement of the block up or down or by movement of the rod holding the guard through the block, so that the saw is protected at all times for any thickness of cut required or any diameter of saw it is possible to use with the table.

The electrical shop does not, in view of the nature of the work performed, contain much machinery. A drying oven, constructed of hollow tile with a close-fitting iron door and heated by an electric heater; two home-made tanks with close-fitting tops and compressed-air connections for impregnation of small armatures; a small generator operated from a lineshaft; a switchboard for testing purposes; an emery wheel; an overhead crane for handling heavy armatures; heavy wooden trestles for winding purposes; work benches; tool lockers and the usual line of small tools constitute the equipment of this department. Armatures are moved into the machine shop for banding and turning of commutators after having been wound in the electrical shop.

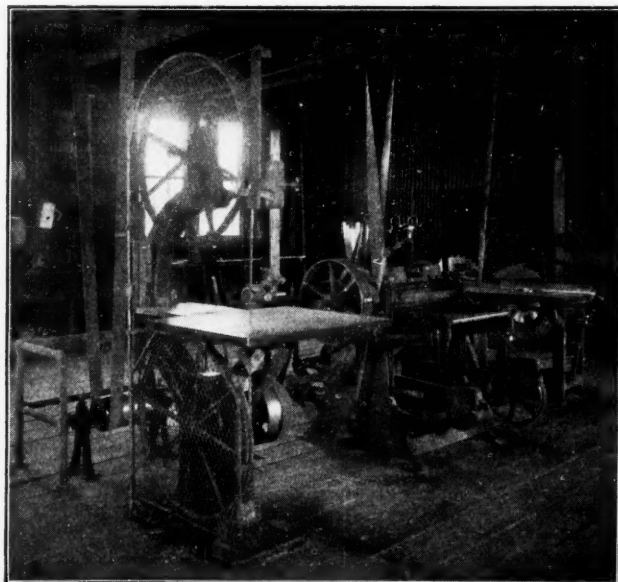
#### THE MACHINE-SHOP EQUIPMENT

The machine shop contains a hydraulic wheel press; a back geared shaper, 24 x 24 in.; a back geared planer, 24 in. by 6 ft.; a pipe-cutting and threading machine, to take pipe from 1½ to 6 in. inclusive; a bolt machine, with dies to cut from ¼ to 2½ in., this machine being also equipped with pipe dies to cut from ¼ to 1 in.; a radial drill press, with a 36-in. swing; an emery wheel; an improved hacksaw, with automatic stop attachment; one lathe, with 38-in. swing and 16-ft. bed; one lathe, with 24-in. swing and 22-ft. bed, and one small lathe for finer work. Small overhead cranes are used to pick up heavy material and swing it to the machines.

Floor space has been provided for one or two additional machines as conditions will warrant their purchase. A room, 12 x 20 ft., is partitioned off in one corner of the machine shop and extends into the electrical shop. This is subdivided as follows: 8 x 12 ft. toolroom; 12 x 12 ft. changeroom with lockers, shower bath, toilet, hand basins, hot and cold water, etc. An office for the shop foreman is constructed above the toolroom.

Four fires are operated in the blacksmith shop, one for machine bits and miners' tools, one for horse shoeing and other light work, and two for heavier work. Each forge is equipped with an 18 in. by 20 ft. stack with conical hood over the fire to collect smoke. This keeps the shop clear at all times, except when a green fire is being started.

All mine cars being of steel and of 3-ton net capacity, provision was made for their repair in this department. A turntable is placed in the track leading through the shop, where cars coming in for repairs are turned at right angles, run off turntable, picked up by overhead crane and tilted or turned as the work may necessitate.



INTERIOR OF WOODWORKING SHOP

An air compressor, belt-driven from an electric motor, with pulleys spaced 8-ft. centers, belt friction being maintained by an idler, furnishes power for operation of riveting and chipping hammers and other appliances throughout the shop. Air is also piped to the steel tipple, about 500 ft. distant, where it is used for blowing out motors, operating riveting hammers, etc.

Blast for the forges is furnished by a 24-in. Buffalo turbine blower driven by belt from a lineshaft. Where steam is available, however, small individual turbine blowers are preferable.

A radial drill, similar to the one in the machine shop, is installed in the blacksmith shop. A belt-driven punch and shear with a 5-ft. gap, capable of shearing 1-in. plate and of punching a 1-in. hole in 1-in. plate, is also part of the equipment. An air-driven power hammer of 600 lb. falling weight capacity, a small triphammer for sharpening machine bits and other tools, an emery wheel, a large grindstone, a remodeled drill sharpener, which is used for upsetting mine-car axles, and an oxyacetylene welding and cutting outfit complete the equipment of this shop.

The acetylene generator is of 500-cu.ft. capacity in 10 hours. This generator is of the stationary type, as this was believed to be better than a portable type for the reason that most of the work is brought to the shop in any event, and where the generator is carted around it will sooner or later be irreparably damaged. Several tanks of 300-cu.ft. capacity each of compressed acetylene are kept on hand, however, for use in emergencies that require transporting the welding outfit to the job.

The cost of the welding outfit with all accessories was about \$1000, and from actual records it paid for itself several times over during the first year of operation.

All large jobs passing through any of the departments are carried on job order cards, which are totaled up at the completion of work and this amount debited against the mine to which the job belongs.

Mine frogs are made to standard pattern, riveted to heavy plate, usually cut from scrap. Switch points are planed true and equipped with a bearing plate, movable hinges instead of rigid fishplates, and lugs for throw bridle.



A record kept on one lot of sixty 40-lb. frogs and switch points showed a net saving over the best quotation from manufacturers of over \$1000. Due allowance must be made, however, for second-hand material used, which would otherwise have been scrapped. This material was charged at actual scrap value.

It was found that rails could be cut cheaper and better with the oxyacetylene torch than by the usual method, this being true of the angle cuts on frogs and switch points as well as square cuts.

A cold metal saw is planned as part of the equipment of the blacksmith shop at some future time, with a view to reducing the cost of machine work on switch points, which will then be cut true to line and require practically no machine work, except chamfering of base.

The arrangement of bit-sharpening hammer in relation to forge, anvil and slack tub, together with the device for heating bits rapidly and evenly, was described in a recent issue of *Coal Age* in the department of "Ideas and Suggestions," this article having dealt with a similar installation.

Many repairs are made locally which would otherwise necessitate new parts. Delays are avoided and quite a few items, such as frogs, switches, mine-car axles and straight shafting for motors and mining machines are manufactured, either from new or secondhand material, wherever it is proved that economies can be effected by making these parts locally.

Broken iron bumpers and frames of mine locomotives, which would otherwise be scrapped, have been welded and returned to service as good as new. Cast iron and steel rope sheaves and rollers, which have been worn flat or out of true, are built up and turned on a lathe and placed in stock in the material house until required.

The shops maintained at the individual mines are used for repairing steel mine cars, sharpening tools and

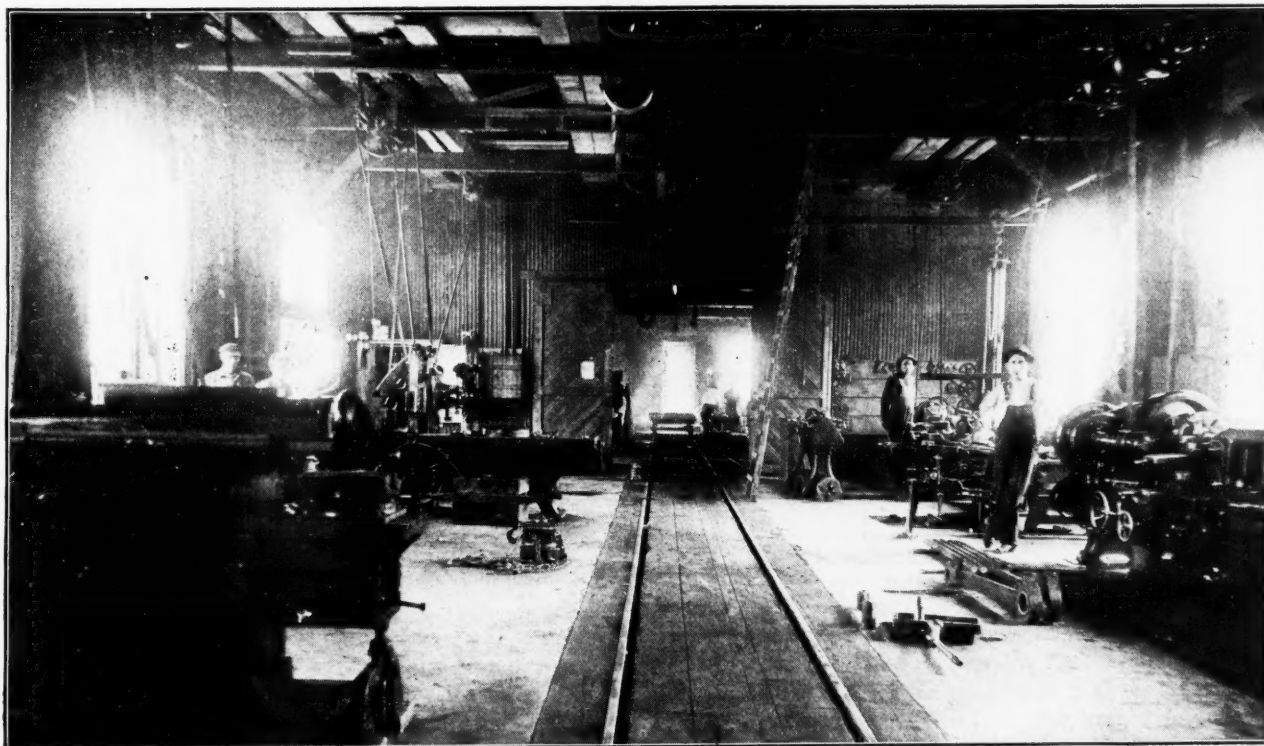
doing other light work which would not be sent to the central shop. Buildings are divided into two equal compartments, 30 x 35 ft. each, one of which is used for blacksmithing and the other as car repair and machine shop. A mine track runs through the center of the building and an overhead crane is provided to pick up and turn over mine cars and other equipment.

The blacksmith department contains two fires, one of which is used for machine bits, tool sharpening and other light repairs, while the other fire is employed on heavier work and general repairs, such as straightening car axles, etc. Forges are equipped with 18 in. by 20 ft. stacks with a conical hood over fires, similar to those used at the central shop. Blast is furnished by a small blower driven from a lineshaft. The other equipment consists of a radial drill press, a small power hammer installed on the same plan as the hammer at the central shop, an emery wheel, grindstone and small power punch and shear.

The machine shop contains, in addition to a crane for handling cars, a pipe machine to cut and thread pipe from  $\frac{1}{2}$  in. to 3 in. inclusive, a light lathe with 14-in. swing and 8-ft. bed and a small planer.

During normal times a great deal of high-class equipment suitable for coal mine shop use can be purchased second hand at moderate prices. Usually various equipment salesmen are only too glad to help out both purchaser and seller by keeping tab on the needs of their customers and reporting machinery for sale to those with whom they may come in contact.

The saving which can be effected by a properly equipped and well regulated shop is difficult to compute, because of the many and varied jobs which come in from time to time. As an illustration, the following equipment was noted as going through the shop recently: One dump cart, one flivver, several mine cars, one 10-



MACHINE SHOP, SHOWING ARRANGEMENT OF MACHINERY AND MATERIAL TRACK



ton haulage locomotive, a mowing machine and plow from company ranches, a road-grading machine, the usual lot of small jobs and last—a baby carriage. After having even a moderately well equipped shop, one wonders how he ever got along for so many years with the makeshifts which were classed as shops.

Everyone knows the story of the Irishman and the coincidence. It is probable that everyone can recall a number of coincidences that have happened in his own experience which illustrate the need of appliances for making rapid repairs on the job; such for instance, as high water or foaming in the boilers, causing a slug of water to enter the steam line; failure of steam trap to trip; sudden starting of hoist by engineer, with resultant shutdown for repairs to engine cylinders; or an over-ambitious or careless motorman who thought he could get in the clear ahead of the other motor, a burned

out headlight which prevented his seeing the other trip or a sharp curve which shortened his range of vision, and the consequent temporary return to mule haulage with the usual anathemas hurled at the express company for its slowness in delivering the repair parts necessitated by the wreck.

Or again, there may have been a little party after payday attended by the engineer, a shaky hand next morning, a monkey-wrench, a perfectly good gear wheel or pinion or both stripped of several teeth and the resultant all-night job of ratcheting and chipping while inserting teeth in place of those destroyed. So on *ad infinitum*.

Who has not, on occasions such as mentioned above, mentally if not actually cursed the policy which caused recommendations anent machine shop and equipment to be pigeon-holed until a later date?

## More Coal—How To Get It

By G. E. DAUGHERTY

South Brownsville, Pennsylvania

THE Government is calling our attention to the urgent need for an increased production of coal. Anyone, therefore, who will expend some thought and energy with this as a motive will be taking a step toward doing his "bit," so with this in view I offer a means of meeting the condition before us. The first thought that presents itself is of a change not only in the methods or system of winning coal and the coöperation and organization of officials and their working forces, but of the humane side—of the consideration that has been given to a miner regarding his working and living conditions.

This is what the miner seeks more than anything else at the present time, and to provide this is a matter of no small consequence. It will require more thought and coöperation among the inside and outside officials and more confidence in one another in order to stimulate and create a better understanding.

A miner who leaves good working and living conditions is the exception. Naturally we have, and always will have, men who are rovers by nature—men who leave their jobs from a purely gipsy instinct—and others who have had their social and domestic tranquility disturbed. These special cases are difficult to reach, and it is no easy matter to learn the desires of all miners. Many cannot present their wants through timidity or ignorance, and others have a boss who is hard to approach. Still others are carefree and independent and will leave a mine without any ceremony.

It is common to hear it said, "Well, I offered him everything on the place and more than I ever got or heard of." That may have been true according to the standard of other days, but to meet the working conditions of 1917 one must forget that he worked in smoky and poorly ventilated workings; pushed buggies, tubs, wagons, etc., for long distances; laid his own road and braced it throughout for the want of spikes; carried posts from one butt to another; baled water onto a loaded car to keep his place dry, for the want of a barrel and pipe or pump line; worked with a safety lamp poorly kept and never objected to working with Slav, Horwat, Calabra or other nationalities.

The foregoing are just a few of the things common to other days that at the present time will start the independent miner looking for another place. Miners prefer to work singly or choose their own buddies. They like to have a voice in the manner of doing their work, and a left-handed man will often quit rather than work in an ordinarily narrow place with another who shovels the same way.

Buddies at a variance are both losers, as they do not work to each other's advantage. One posts his side safely and gets his holes properly placed, and the other has to be pushed and scolded to get his work done. The good man quits and the poor one stays.

This same condition exists between outside and inside officials. When they do not coöperate, the company is the loser until they pull together or some eliminations are made.

Who has not heard foremen, assistants and firebosses question the superintendent's judgment on certain inside matters, because he has never dug coal or skinned mules and was not the possessor of a mining certificate, even though he had been a superintendent for many years? These instances are common and prove the axiom that a little knowledge is a dangerous thing.

To get away from the old system of mining and try something new is a venture requiring much patience and determination; and even though it appears good from every standpoint, the miner will often offer strenuous objections for the reason that when one gets in a rut it is difficult to dislodge him.

A system that I have tried and found efficient, safe, economical and satisfactory to both miner and operator, although it changed the wage scale, is not to permit a miner ordinarily to do anything but set his posts and load coal, which reduces his tools to a pick, shovel and ax—real tonnage producers.

I believe that the average miner of today is not qualified to lay a substantial track, place holes properly or blast them wisely. The track in rooms should be such that cars and machines can be safely and expeditiously moved to the parting, and this is rare where miners lay their own road. A good track in rooms is equally as

necessary as good main or butt haulage, as coal has to be placed on the parting before it can be taken outside. Good room roads have increased the results of drivers and loaders 25 per cent., and have decreased the accidents to both men and animals and the frequency of cars going to the shop for repairs.

All holes are drilled with electric power drills and are charged, tamped and blasted by shotfirers; road is laid in rooms by trackmen and all work is done at night, so that when the miner enters his place in the morning he finds his place has been cut, drilled and blasted, the track laid, timbered when necessary, 20 tons of loose coal ready to be loaded and an empty usually placed by the night crew. He has no smoke to hinder, injure or prevent him from cleaning his place each shift, and nine and ten wagons are loaded as easily as were six and seven under the old system.

The night work is performed by experienced men only, which insures that it is done in a reliable and efficient manner. This is especially important in regards to the proper placing and blasting of holes in the Pittsburgh seam, where the roof coal is kept up to keep the coal free from the drawslate, which often breaks up and mixes with the coal when the holes are placed high. Each shift is in charge of a competent foreman, as to prepare the places at night and clean them up in the day time is a job for a wideawake foreman.

This system has not only proved satisfactory to the miner, by giving him an almost ideal working condition, but it has increased his earnings and has resulted in a big increase in tonnage for the operator and a pleasing decrease in costs.

## Graphic Determination of Heat Units in Coal

The thermal values of fuel as determined from analysis are not usually to be depended upon, as the results so obtained are seldom of sufficient accuracy to be of value. The formula commonly used for computing the heat value from the ultimate analysis is credited to Dulong. The original formula has been modified to suit special applications by W. C. Stripe in *Power*, and is given as

$$\text{B.t.u. per pound of dry coal} = 14,600 C + 62,000$$

$$\left(H - \frac{O}{8}\right) + 4000S$$

in which  $C$ ,  $H$ ,  $O$  and  $S$  are the proportionate parts by weight of carbon, hydrogen, oxygen and sulphur. It is customary to determine ultimate analysis on the dry-coal basis, and this formula is correct only with reference to analysis so determined. The thermal valuations determined by calculation are only approximate, and equally satisfactory results may be obtained by graphic representation, as shown by Fig. 1.

Assume a coal having the following ultimate analysis: Carbon, 79.90 per cent.; hydrogen, 4.98; oxygen, 4.31; nitrogen, 1.85; sulphur, 1.13; ash, 7.83; moisture, 2.91 per cent.

Referring to Fig. 1, the upper arrowed line shows that the carbon represents approximately 11,660 B.t.u. The lower heavy dotted line shows that approximately 2750 B.t.u. must be added for the 4.98 per cent. hydrogen, when 4.31 per cent. oxygen is present. The light dotted

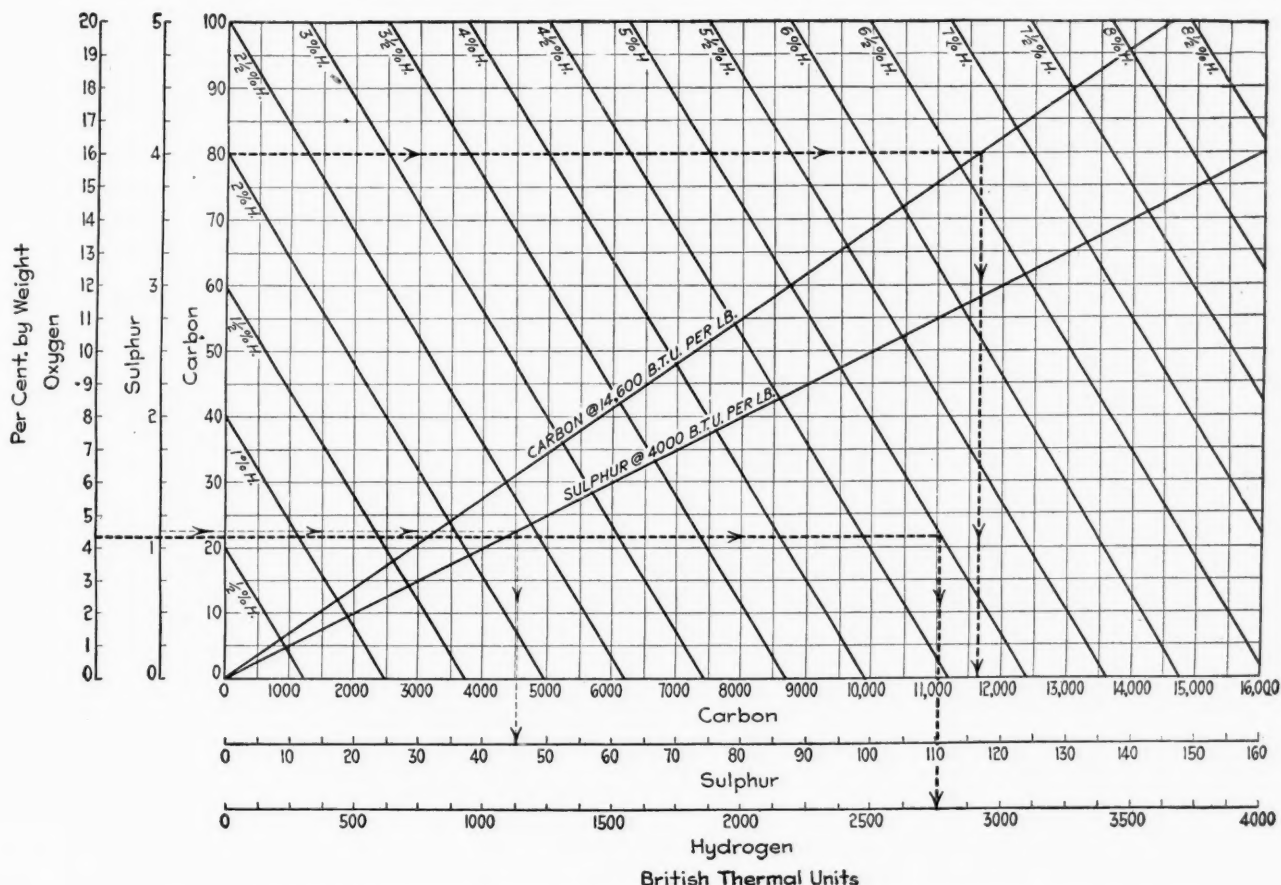


FIG. 1. GRAPHIC REPRESENTATION OF DULONG'S FORMULA FOR HEAT VALUE OF COAL

line shows that approximately 45 B.t.u. will be obtained from the 1.13 per cent. sulphur. The summation of these three values gives 14,455 B.t.u. as the total approximate thermal value of this fuel. Calorimeter tests on coal of the foregoing analysis have shown a value of 14,380 B.t.u., hence the results obtained graphically are satisfactory. The curve shown by Fig. 2 represents this relation and was plotted from 66 analyses made by the United States Geological Survey, of coal from 18 different states. Assume a coal having the following approximate analysis, determined on a dry

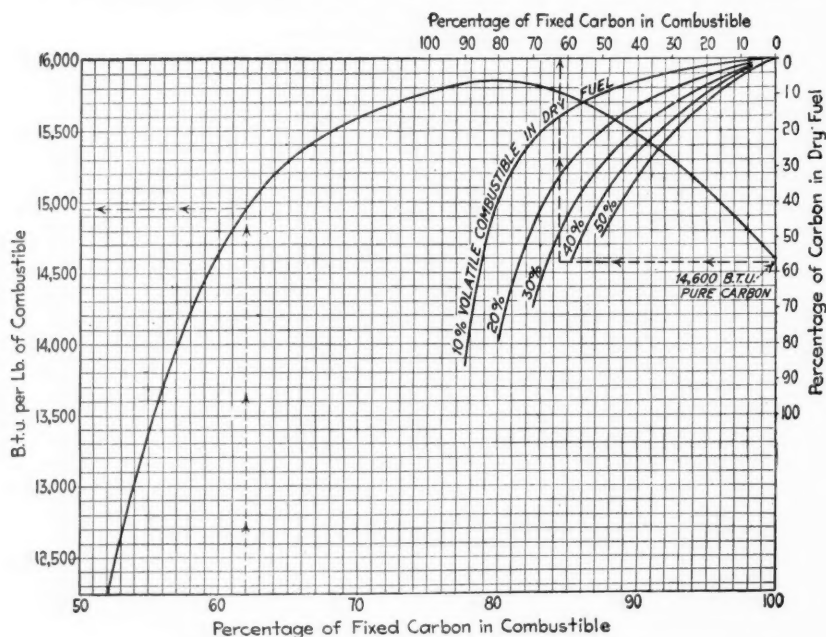


FIG. 2. RELATION BETWEEN FIXED CARBON AND THERMAL VALUE

basis: Fixed carbon, 57.5 per cent.; volatile combustible, 35.0 per cent.; ash, 7.5 per cent.; moisture, 4.5 per cent. In Fig. 2 the heavy arrowed line indicates that the fixed carbon is 62 per cent. of the total combustible. The light arrowed line indicates that with the fixed carbon and volatile combustible so proportioned, a thermal value of approximately 14,950 B.t.u. per pound of combustible may be expected. Then, if 92.5 per cent. of the fuel is combustible, the thermal value per pound of dry fuel is 14,950 times 92.5 per cent., which figures approximately 13,828 B.t.u.

## Powdered Coal for Steam Plants

Powdered coal used in heating and puddling furnaces should not have less than 30 per cent. volatile matter, nor less than 50 per cent. fixed carbon. Its moisture should not exceed 1.25 per cent., its ash 9.50 per cent. and its sulphur 1 per cent. The requirements for open-hearth furnaces are more rigid. The volatile content should be higher and not under 36 per cent. The fixed carbon should be at least 52 per cent. The moisture and sulphur may still be 1.25 and 1 per cent. respectively, but the ash must fall below 6 per cent. In powdered coal sulphur when present only in small quantities has no ill effect in heating and annealing furnaces, but it should be given careful attention when used in the reduction and refining of metals or ores.—C. J. Gadd, Journal of the Franklin Institute.

## State Administrators To Have Full Power

That the fuel administration expects to give the fullest possible power to the state administrators became very apparent during the recent conference between these newly appointed officials and the fuel administration. Dr. Garfield announced that he would handle the coal problems of each state only through the state administrators. The right of appeal from the state officer will be limited. The burden of keeping

the retail dealers in line has been assigned to the state administrators. Realizing the importance of the state machinery, Dr. Garfield took every opportunity, during the stay of the state administrators, to impress them with the need of keeping the organization free from politics. Retailers are not expected to make a higher rate of profit than they did in 1915. The gross margin which the fuel administrator will permit retail dealers to increase by 30 per cent. over the corresponding 1915 gross margin, was described by Dr. Garfield as the difference between the price at which the dealer sells to the consumers and the price which he pays for the coal delivered at the railroad siding. The 30 per cent. increase in the gross margins is reckoned to represent the additional cost of distribution over the same cost two years ago. State administrators were urged by J. J. Storrow, of Boston, the fuel adminis-

trator for New England, to let nothing interfere with continuous scrutiny intended to insure economies in transportation. By neglecting no step intended to save delays to cars and to secure maximum loading and prompt handling, the most potent steps toward relieving the situation can be taken, he told the state administrator.

Once the state administrators are installed, L. A. Snead, who is in charge of distribution for the fuel administration, expects to see a decided check placed upon the hoarding of coal and is certain that emergency needs can be met more intelligently. With the state machinery in operation, prompt and reliable information will be available as to the acuteness for the necessity of an immediate shipment of coal to prevent distress, Mr. Snead informed the assembled state fuel administrators.

Instruction as to what would be expected of them, toward the promotion of fuel economy, was given by Van H. Manning, the director of the Bureau of Mines. He urged the state officials to use all means available to impress upon consumers of coal the need of employing capable and conscientious firemen. The professional fireman, he pointed out, handles 80 per cent. of the coal which goes into consumption. The fact, however, that the householder handles only 20 per cent. of the total fuel consumed should not militate against an active campaign of education to promote the economical use of fuel for the home.



## New Ideas in Danger Signs

By W. L. CHANDLER

Mishawaka, Indiana

**P**UTTING up a danger sign is not enough. You must make it such a sign that men passing it will be attracted to it and will be unconsciously led to read it and after reading it will be prompted to act wisely. These are stiff specifications, but getting people to read and heed danger signs is just like selling soap or any other thing by advertising. The advertisement must attract attention, arouse interest, create desire and lead to favorable action.

If a sign told about a cut in wages, every man would be intuitively led right up to that sign, and every last one of them would devour every word on it; and they would tell everybody else about it. The nearer you can approach to that degree of efficiency in designing a danger sign the more men you will send home to their wives and kiddies with all their toes, fingers, eyes and bodies intact.

Don't make the mistake of sticking signs around so thickly that men won't pay attention to any of them. It is just like the old story of the boy who called "Wolf" so often in jest that when the wolf really menaced him and he again called "Wolf," the men paid no attention to him. If men see danger signs at places that are not dangerous or that are remotely dangerous, they will discount others they see which are placed to warn them of imminent danger. I saw a sign not long ago which had a big design clear across the top of it and monopolizing over two-thirds of the space on the sign with the word "Danger" as part of the design. In the small white space below the design were the words "No Admittance." The sign was on a fence where no danger could be found. I afterward learned that the sign was put up to scare people from climbing the fence. But mind you, every time a danger sign is used where there is no danger, men are going to be calloused against the other danger signs intended to save their lives. A danger sign should not be used to keep people out unless admission is prohibited because of real danger. Don't be guilty of killing the value of danger signs by making them too common. And now about the kind of danger signs to buy; I have seen lots of danger signs, and

I had always thought that those black-and-red combinations were mighty effective. But I have found that I had overlooked many of the points of utmost importance in choosing danger signs.

In the first place, a danger sign is one thing and a danger emblem is another. A danger sign tells a man what to look out for, and instead of telling him what *not* to do, it should tell him what *to* do. When a fellow reads a real, for sure, danger sign, he should know without hunting or looking farther exactly what the danger is; whether explosives, unsafe timbering, railroad crossing, or what not, and should be told just what to do to protect himself unless the means of protection is self-evident. Don't scare a man by telling him only that danger exists. He might be killed while looking around to find out where the danger is.

The danger emblem is an important part of a danger sign. I drove down from New York in my car recently, and was almost killed because a warning sign on the roadside looked so much like all the advertising signs I saw that I did not notice it except by the merest chance. I saved myself, but you bet I did some tall thinking about danger signs after I got my breath.

In the first place, we need some striking symbol, emblem or distinguishing mark of some sort to place danger signs in a class by themselves. If that warning sign along the road had been distinctive so that the least glance would have shown us that it was a danger sign and not an advertisement, we should have fewer gray hairs today. Every mine and factory has both regular signs and danger signs, and the need for a distinguishing mark or danger emblem is just as great at all these places as it is on the country roadside. The most important point regarding danger emblems brought out at the National Safety Congress recently was the values of different colors. White is very much better than any other color. Yellow is next best but requires about three times as much illumination as white to make it equally visible. Red is down near the bottom of the list next to dark blue and black and requires about five times as much light as white does to give equal



AN EFFECTIVE "LOOK OUT" SIGN

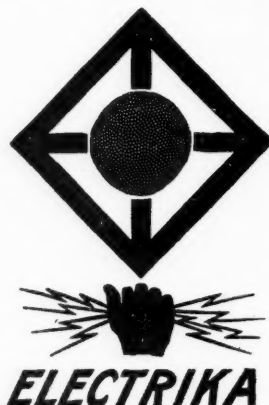
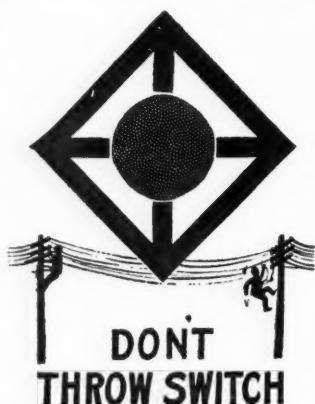
The four words surrounding the universal danger emblem signify danger in English, French, "Belgian," Norwegian, Swedish, Danish, Polish and Hungarian. Foreigners learn the meaning of the emblem so soon that the words are superfluous and detract from the emblem. The stippled ball is printed in red.

visibility. You know how big a problem lighting is in a mine, how the darkness soaks up most of the light we provide and therefore how important it is to select the sign which will show best and farthest with the amount of light provided, and then when the current fails how we must depend upon the miners' lamps. Those are the times when dangerous places may become much more hazardous, and our responsibilities become greater

because our juice has failed us. We must protect men during these times more thoroughly than during normal conditions. A sign which is not seen may cost lives and money. We owe it to our men and ourselves to see that our danger signs are as efficient as it is possible to make them. If white is 300 per cent. better than yellow, 500 per cent. more effective than red and infinitely better than black, it is a cinch that white must be the prevailing color in the successful danger emblem.

My criticism of many danger signs I have seen in mines is that the emblems have black and red predominating; these being about the poorest colors to be had. A committee of the National Safety Council spent three years studying the colors and shapes which might be used in designing a danger emblem. This committee was not prejudiced in favor of any danger emblem, had nothing to sell, and had no patented design which it wanted to see adopted. Every design known and every suggestion received by the committee was carefully tested. Special apparatus was designed and built at the plant of the Dodge Manufacturing Co. to give these all the acid test for the greatest visibility and effectiveness under both favorable and unfavorable conditions. Over 100 designs were made, and in addition there were many tests for color and shape.

The design which embodies the best features developed by these experiments was recommended by the committee and adopted by the Safety Council as its official danger emblem. The emblem thus carefully developed has been put to use in America and some foreign countries and bids well to be adopted universally as soon as the war is over. We should profit by the work which has been done by this national organization and use this emblem. Ultimately our foreign labor will come to us with a knowledge of this emblem just as they now know what the red cross stands for, and men coming from other states will know it before they reach us. With this unbiased organization behind it this emblem will receive a speedy adoption, and we should ask our state authorities and mining organizations to cooperate in the work of spreading the use of it.



This universal emblem does not embody the word danger because no one word for danger could become universal. Some may want to put the word danger in English and other languages around or near the emblem, but I think that spoils it. Men will quickly learn what the emblem stands for just as they learned the significance of the red cross. Simplicity suggests the use of the unmutated emblem. The main idea behind this plan of making signs is to combine three things: First, the universal danger emblem to get the attention—to tell people that these are danger signs; second, words indicating the nature of the danger and how to avoid it, if not self-evident, and third, a simple picture in strong silhouette illustrating the nature of the danger, so that the idea it is intended to convey may be grasped instantaneously by the men as they go by hurriedly.

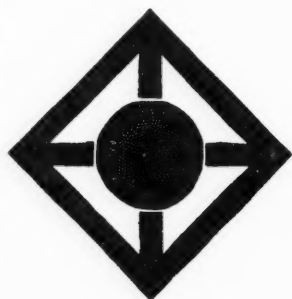
A foreigner with or without a knowledge of our language will soon learn to recognize the emblem and be conscious that danger is near. He may not remember what he was previously told about the meaning of certain words, such as "Look out for the cars." However, coupled with the picture of a locomotive and a man jumping out of the way the words "look out" will quickly bring to his mind again the source of danger which was explained to him and the proper action to save his life. He won't have to be told twice what that sign means.

Another sign is meant to take the place of one saying, "Men on line, don't throw switch." It shows a picture of the men on the line, one being shocked, and reads "Don't Throw Switch." It would perhaps be better to say, "Leave Switch Alone."

The sign showing explosives tells its own story. If a foreigner did not comprehend its meaning the first time he saw it, after it had once been explained to him he would quickly understand it when he encountered it a second time. If a sign needs to be explained to non-English-speaking foreigners not more than once, it is a good sign.

The next point to consider is how you are going to get your signs made. This type of sign is so new that sign-makers are not yet prepared to manufacture them, and it may take a stiff backbone to avoid being talked into spending good coin for signs of the older and less effective styles.

But remember that money so spent is not an expense item, it is an investment made to save lives, legs, eyes and compensation. Saving a ten spot on the initial cost of a few signs may later result in accidents costing



# EXPLOSIVES



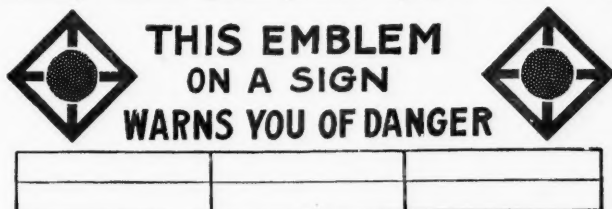
thousands of dollars and untold misery which might be avoided by sign which will produce results. Let's insist on the signs and emblems that will produce the results we are after and then try to find someone who is willing to make them for us at the right price.

The fact that this universal danger emblem adopted by the National Safety Council embodies so many attention-arresting features has led a number of advertisers to seek the privilege of using it in exploiting their wares. The use of this emblem on advertising signs would only vitiate its value on danger signs, so the council has applied for a patent covering the emblem and has adopted certain regulations governing its use.

Any one is free to use the emblem without any charge whatever so long as the spirit of these regulations, which are meant to benefit the people by restraining those who might misuse the emblem, is observed.

### REGULATIONS OF THE NATIONAL SAFETY COUNCIL REGARDING USE OF DANGER EMBLEM

1. The danger emblem is to be used only to warn the public at definite places of conditions requiring more than ordinary caution against possible injury or loss of life.



#### EDUCATIONAL SIGN

This sign is intended for instruction only until such time as people generally become well acquainted with the new universal danger emblem adopted by the National Safety Council and already in use in American and some foreign countries. When the war is over its adoption in all European countries will facilitate the educational work. The blank spaces may be utilized to give the translation of the English words into foreign languages

It may be displayed, however, for purposes of instruction, as follows:

a. When used for instruction the danger emblem shall not, except as elsewhere herein provided, exceed 3 in. square, and shall be so displayed that the public will readily understand that it is being displayed for instruction and not to indicate the presence of danger.

b. Danger emblems of any size may be displayed on lecture platforms or through stereopticons or moving-picture machines, provided such use does not in any way confuse or mislead the public, and that such use does not violate any of these regulations.

c. In order not to confuse the public, the posting of the emblem for educational purposes should be confined to bulletin boards generally recognized by the public as such.

d. The danger emblem may be used on inside pages of newspapers, magazines, books and other literature when for educational and not for commercial purposes. The reason for such use should be clearly indicated.

2. Its various dimensions must always be in proportion to the master size, which is 12 in. square.

TABLE OF SOME ACCEPTABLE PROPORTIONS IN INCHES

Overall Size of Black Square	Longest Diagonal of Square (Approximate)	Diameter of Red Ball	Total Width of White Cross	Width of Black Diagonal and Border Lines
24	34	13	19	2 1/2
18	25 1/2	9 3/4	14 1/4	1 3/4
12	17	6 1/2	9 3/4	1 1/4
10	14 1/4	5 3/8	7 7/8	1 1/8
8	11 3/8	4 3/8	6 1/4	1 1/8
6	8 1/2	3 1/8	4 3/4	3/4
4	5 5/8	2 3/8	3 3/4	5/8
3	4 1/4	1 7/8	2 3/4	5/8
2	2 7/8	1 1/8	1 9/8	5/8
1	1 3/4	3/4	3/4	5/8

3. When displayed, the danger emblem must always have one of its diagonals in a horizontal position.

4. The danger emblem must always be kept free from defacement by word, sign or character of any nature.

5. The danger emblem should always be accompanied by words, signs or characters indicating wherein the danger

lies, or giving the specific reasons for its use; it should never be used alone.

6. When the need for caution which prompted the use of the danger emblem has ceased to exist, the emblem must be removed.

7. The word "Safety," or its translations or synonyms, shall not be used in conjunction with the danger emblem. Such words often carry a suggestion exactly opposite to that for which a danger emblem is intended.

8. The danger emblem may be used in advertisements of danger signs of which it forms a part, but must not be used for any other purpose of trade, or as an advertisement, or in any decorative way, except in the solicitation of orders for danger signs, when emblems of any size may be used, if confined to catalogs or other literature and displayed only as a part of a complete sign in accordance with other regulations.

## Compresses and Tourniquets

BY J. T. BRADLEY

Uniontown, Pennsylvania

The question is often asked by first-aid students—What is the first essential feature in case of an accident where there is severe hemorrhage?

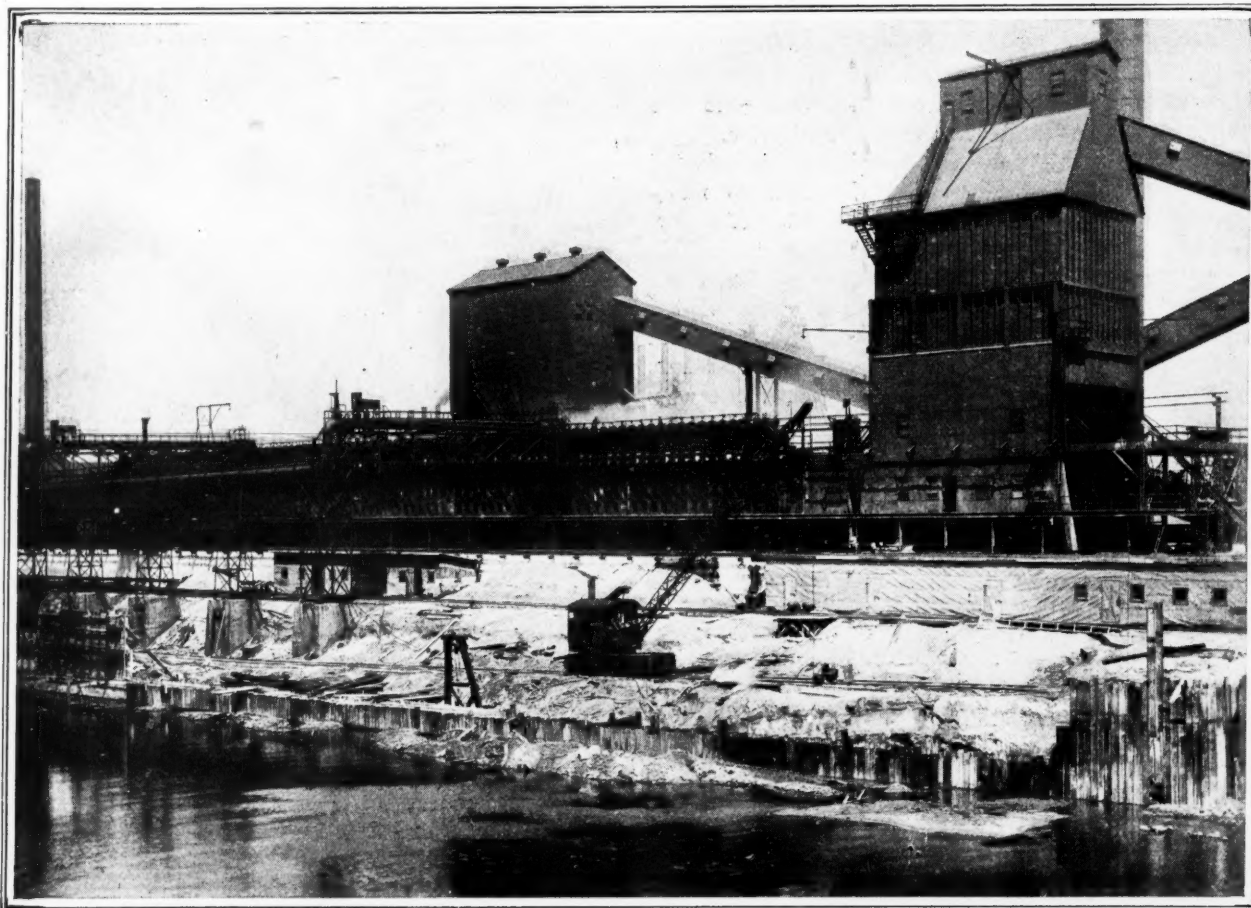
Practically all wounds bleed more or less, but comparatively few are accompanied by dangerous hemorrhage unless the large blood vessels are injured. However, unless the limb is badly crushed, over 90 per cent. of all hemorrhages can be arrested with the use of a compress. A compress can be made from a bandage, which should be surgically clean or antiseptic, and applied directly over the wound and bandaged on tightly. Sometimes it is necessary to apply more pressure to a wound; this can be done by wrapping the fingers with sterile gauze or bandage and inserting them into the wound, which will cause the blood to clot.

If within a reasonable length of time after the compress has been applied the bleeding fails to stop, or the limb is so badly crushed that a compress cannot be used to satisfactory advantage, then it becomes necessary to apply a tourniquet to arrest the bleeding. Before a tourniquet is applied, it is necessary to understand whether it is arterial or venous bleeding, and where pressure should be applied to be most effective. In arterial hemorrhage the blood is bright red in color and is expelled in jets. The tourniquet should be applied on the main artery between the bleeding point and the heart and as close to the wound as possible; also apply pressure on the bleeding point itself.

In venous bleeding, the blood is dark or bluish-red in color and the flow of blood is continuous. A compress should be placed on the wound and a tourniquet on the side away from the heart. This kind of bleeding is not usually difficult to stop as the blood is thick and sticky and soon forms a clot or coagulates. Capillary bleeding is the least serious and can be controlled with a compress.

In case of an accident where the arteries, veins and capillaries are all cut in a wound, the arterial hemorrhage will demand first consideration. All wounds should be kept at rest after receiving treatment. Keep the wounded part in an elevated position. Position is often of much value in stopping bleeding, as by elevating the arm or leg the heart is made to pump against gravity and is given a much better chance to form a blood clot. Do not wash away any blood clots. Keep patient warm with hot water bottles and blankets until the doctor arrives. Do not allow any dirty clothing to touch a wound.





## Byproduct Coke Plant of Brier Hill Steel Co.

By F. T. MORAN

Superintendent Byproduct Coke Plant, Brier Hill Steel Co.,  
Youngstown, Ohio.

**W**ORK was started Apr. 10, 1916, by the H. Koppers Co., of Pittsburgh, Penn., on a byproduct coke plant for the Brier Hill Steel Co., of Youngstown, Ohio. The plant consists of a block of Koppers cross-regenerative ovens, with the necessary coal-handling, coke-handling and byproduct units. Shortly after the work was begun on the coal-oven plant a contract was let to the Koppers company for a benzol plant.

The oven unit consists of 84 cross-regenerative, 12 $\frac{1}{2}$ -ton ovens. These ovens now run on a 15 $\frac{1}{2}$ -hour coking period and consume approximately 1600 tons of coal a day. A mixture of 85 per cent. high volatile and 15 per cent. low volatile coal, crushed to 80 to 85 per cent. through  $\frac{1}{2}$ -in. mesh, is used. About 68 per cent. is returned as furnace coke.

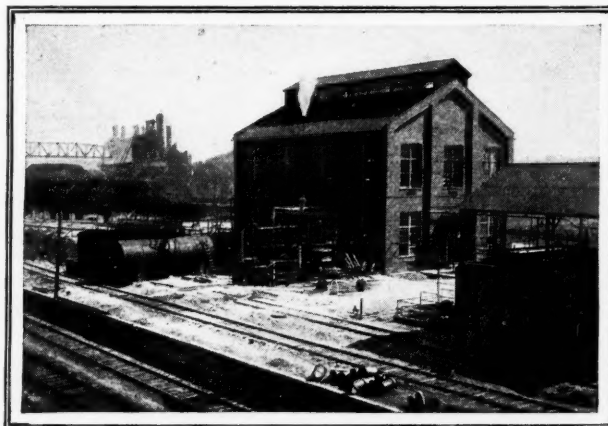
The coke is quenched, drained and run through rotary screens, all under 1 $\frac{1}{2}$  in. being screened to a breeze bin. The coke is loaded into cars and sent to furnaces. The breeze is taken to the boilers and used over Lehigh stokers to produce the steam required for running the plant.

The coal- and coke-handling systems were installed by the Robins Conveying Belt Co. for the H. Koppers Co. These systems are the most complete that have been installed during the past year.

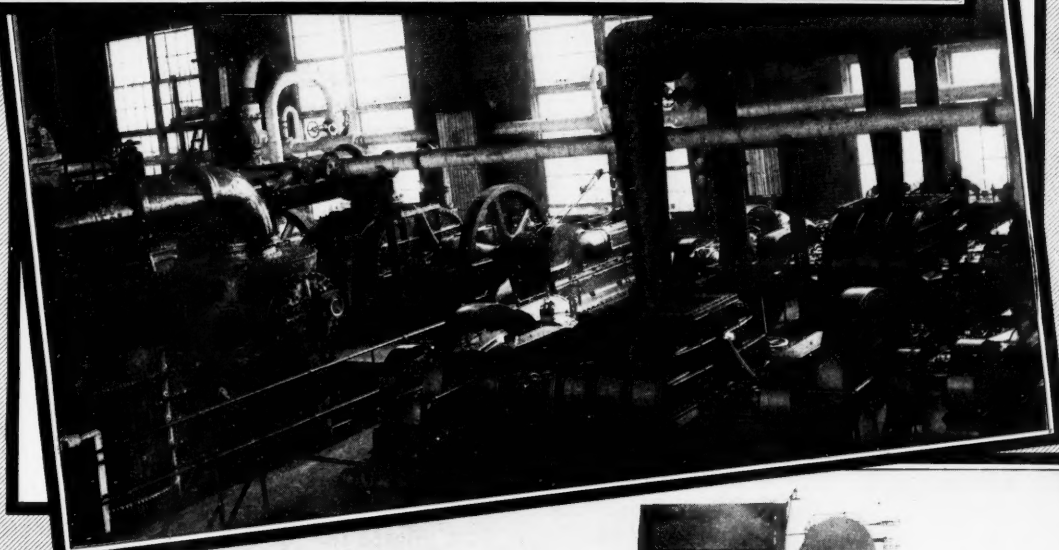
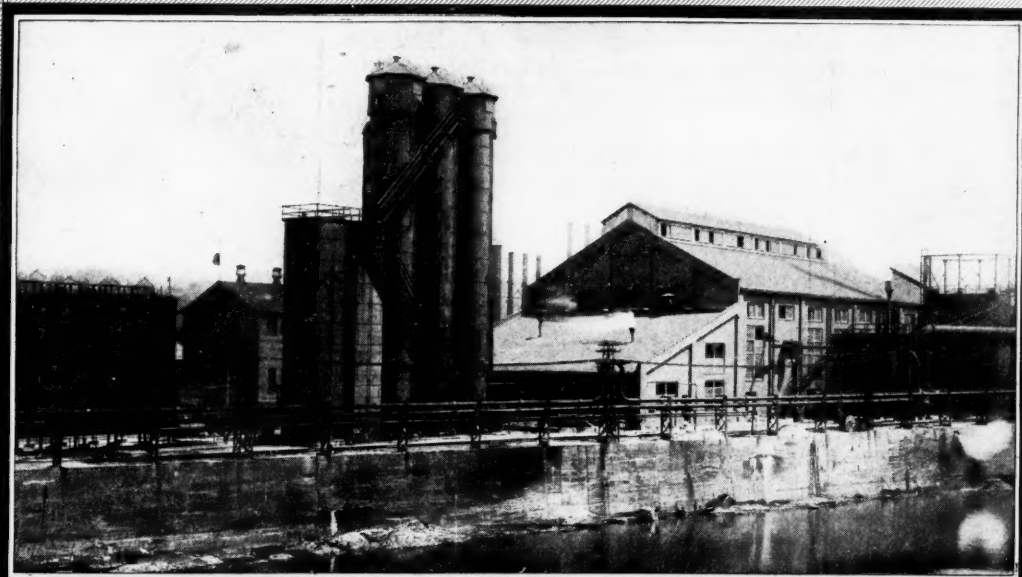
In a period of 24 hours the plant produces about 1100 tons of furnace coke, 16,000,000 cu.ft. of gas, 9000 gal.

of tar, 36,000 lb. of sulphate of ammonia, 75 tons of coke breeze and 5000 gal. of light oil. About 40 per cent. of the gas produced is used at the ovens for heating, and 60 per cent. is sent to the openhearth and mill soaking pits for the heating of steel.

The byproduct unit consists of two Connellsville positive exhausters, driven by cross-compound Harrisburg-Fleming engines; two P. & A. tar extractors; two reheaters; two large oval double ejector saturators; six centrifugal salt dryers; two Koppers latest design am-



EXTERIOR VIEW OF BENZOL BUILDING



VIEWS OF BYPRODUCT COKE PLANT OF BRIER HILL STEEL CO., YOUNGSTOWN, OHIO

(Top) Exterior view of the byproduct building—final coolers on extreme left, benzol scrubbers in center, primary coolers and gas holder on right. (Center) Interior of byproduct building, showing exhausters and boosters. (Bottom) Quenching car discharging coke on coke wharf; quenching station and coke-screening building in background



monia stills; and the necessary tar, ammonia, water and oil pumps.

In connection with the benzol plant there is installed at the byproduct unit two final direct splash coolers and three benzol scrubbers. Water for the cooling of gas in the final coolers is run over a Wheeler water cooler and used over and over again.

The benzol plant consists of two light oil, one crude and three finishing stills, with the necessary pumps, re-

heaters, superheaters, heat exchangers and oil-cooling units. A large tankhouse, naphthalene building and loading dock are part of the plant. Steam for the benzol plant is furnished from the coke plant boilers through a line 2600 ft. long.

The illustration at the head of the article shows a battery of coke ovens. The coal bin is shown on the extreme right, the coal-crushing and mixing building in the middle background.

## Mining Engineers Meet in Middle West—II

A Trip to a Byproduct Works, to Two Up-to-Date Coal Mines and to the Steam-Shovel Workings Is Made by the American Institute of Mining Engineers

By R. DAWSON HALL

IN THE afternoon of Monday, Oct. 8, the engineers held a patriotic meeting emphasizing the opportunities of the industry to render assistance in the war. At this meeting there were representatives of the embassies of Great Britain, France and Russia, and many men spoke who are prominent in the activities in Washington in promoting the development of those mineral industries of which the United States stands in dire need.

A cablegram of recognition of the service rendered to civilization and freedom by the entrance of the United States into the war, penned by Sir Robert A. Hadfield, the great British steel metallurgist, an honorary member of the A. I. M. E. since the year 1906, was read by the secretary. L. D. Ricketts, the president for 1916, sent his regrets and said that he was slowly recovering from his indisposition. Herbert C. Hoover, the Federal Food Commissioner, a member since 1896, was unable to be present but sent a letter of regret. Herbert N. Moore, the president, made the opening address and was followed by H. M. Ami, the British representative, an Anglo-Frenchman from Quebec, Canada, and E. DeBilly, the French representative, a mining engineer from Algiers, who can make a better extempore speech in English than many mining experts who claim it as a mother tongue. Theodore Foss, the Russian representative, followed with an address declaring that Russia and the United States now had similar aims and that the co-operation of Russia in the war would soon become more vigorous and effective.

### MEN WHO ARE FINDING MINERAL RESOURCES FOR US

Following these representatives, the heads of important departments in the war industries were heard—F. W. DeWolfe, temporarily assistant director of the Bureau of Mines and formerly and yet-again-to-be State Geologist of Illinois, also the president of the Association of State Geologists; William Young Westervelt, chairman of the War Minerals Committee; David White, United States Geological Survey; A. G. White, mine economist, United States Bureau of Mines, secretary of the War Minerals Committee, and W. D. Hotchkiss, secretary Association of State Geologists. The discussion was entirely relative to the needs of the state arising out of the war, the shortage of pyrite and manganese looming up most prominently.

In the evening a banquet was held in the Planters Hotel, with Philip N. Moore, the president, as toastmaster. Capt. Robert W. Hunt, a former president of the institute (1906), spoke feelingly about the war and its demands on every citizen, and argued as did Sidney J. Jennings, the leading candidate for the presidency of the institute, in favor of the indenturing of Chinese labor for the period of the war.

### ADVOCATE IMPORTING COOLIE LABOR DURING WAR

Both felt that to relieve the undoubted shortage of labor in this country Chinese should be introduced in a manner which would not be objectionable or hurtful to the interests of our American workingmen. The French have permitted and regulated the introduction of coolies, and it is possible that the United States will feel it wise to do the same, holding back a part of the wage to be paid to the coolies as a means for providing for their transportation and repatriation.

T. A. Rickard's speech was one of the best at the banquet. He spoke on the indifferent attitude of the West toward the war, which he declared resulted from its remoteness from the conflict and from the many soothing and palliating statements which, before the war started, the Chief Executive had made regarding our foreign relations. He said that the losses the Americans would sustain in the field and the large amount of news which would be published in the Western press after America had really entered the war would awaken a feeling of patriotism in the West fully equal to that which the East now entertained.

Edwin Ludlow, the vice president of the Lehigh Coal and Navigation Co., spoke with some pride about the patriotism and performance of the mine workers of the anthracite region. He said that 15 per cent. of the mine workers had been drawn away to munitions works and that a large number had enlisted as soon as the call came, or as members of the National Guard. When the draft occurred, few men were taken, as the quota had been provided by voluntary enlistment.

Mr. Ludlow said that the anthracite region, though faced by the severe labor depletion arising from the causes mentioned, had produced 7,000,000 more tons than in the same period a year before. He mentioned the large amount of money subscribed for Liberty bonds by the employees, 40 per cent. of whom were foreigners,



especially Slavs and Poles. Many of the latter were enlisting for war service under the banner of France.

The following morning the coal-mining men visited the Koppers' ovens of the Laclede Gas Light Co., making the trip in automobiles, the plant being handy to the City of St. Louis. Here the plant was explored under guides who explained the details of manufacture. At this plant there is no sponge of carbon formed above the coke because the proportions of low- and high-volatile fuel are such as to prevent it.

When the West Virginia Coal Mining Institute visited the Kentucky Solvay Coke Co.'s plant, near Catlettsburg, it learned that 30 per cent. of the coal used was low-volatile coal from the New River region and the other fuel was from the Elkhorn and Guyan valleys. At the Laclede plant, on the other hand, the mix is 17 per cent. low-volatile coal and 3 per cent. high-volatile coal from the Elkhorn field. The height of the charge in the oven is kept down, with the result that the quantity of light oil is increased. About 13½ tons are used in a charge.

Hurrying back to the boat landing, the members were fortunate enough to catch the special boat to Herculaneum. The boat was a regular old-time stern-wheeler, with its negro minstrels and opportunities for dancing and merriment. But the crowd was not disposed to be frivolous, and after watching the St. Louis shores they went below to lunch, which was provided, as was also the boat, by the generosity of the entertainment committee. Sessions were held on the boat both going and returning, everybody taking much interest in the proceedings from which statement it must not be inferred that there was no dancing whatever.

#### EVERYONE APPEARS TO BE HUNTING PYRITE

A large map of the lead and zinc field, including Carterville, Webb City, Picher (pronounced "Pitcher"), Tar River, Commerce and Miami, adorned the main deck, and it was duly described by Victor Rakowsky, of Miami. A. H. Fay described the census of engineers and well men just completed by the United States Bureau of Mines for war purposes. Other speakers were Alfred W. G. Wilson, engineer and mineral geologist of the Mines Branch of the Department of Mines, Canada; Dr. Miller, T. A. Rickard and Fletcher Hamilton. Mr. Wilson's remarks were on the supply of sulphide and the importance of collaboration between Canada and the United States relative to the sulphur and railroad-car shortage.

One could not but feel a little wearied when hearing the two last speakers of the meeting discuss pyrite in California and pyrite in Colorado respectively. We want pyrite near the factories needing sulphur. Pyrite is a panhandler; it cannot pay for first-class passage unless the journey is short or there are other values, such as copper, beside sulphuric acid to aid in paying for the accommodation.

There is lots of pyrite here and in Spain. The freight rate on Spanish pyrite would not exceed \$10 even in these times of high freights. But we want handy and cheap sulphur, and with all there is in the coal mines to be had at a song it seems farcical to rake for pyrite in faraway California or Colorado. Other speakers were Phillips, Smith and Marcus R. Campbell, acting director and geologist, respectively, of the Geological Survey.

After beaching near Herculaneum, the party visited the smelter of the St. Joseph Lead Co., and returned to a dinner on the boat, also provided by the entertainment committee. After this there was another session of the institute presided over by J. W. Malcomson, a consulting engineer from Kansas City. The only papers of interest to coal men presented at this meeting were "Mine Models," by H. H. Stoek, dean of mining, University of Illinois, Urbana, Ill., and "Resistance of Artificial Mine-Roof Supports," presented by Eli T. Conner but written by William Griffith. It was suggested that the supports proposed by Mr. Griffith had not been tested on a sufficiently large scale to give a satisfactory basis for approval or disapproval. Most mining men feel that there is little to be looked for from expensive roof supports, the main hope being in flushing the mine with sand or other slush.

#### WHO SHALL HIRE AND FIRE MINE EMPLOYEES?

T. T. Read, J. W. Malcomson, C. W. Goodale, H. M. Wilson, R. M. Catlin and J. A. Ede had an interesting discussion on hiring and firing. Mr. Read advocated the way of the New Jersey Zinc Co., where men were hired by a sociological expert and where the foreman could not discharge men from the service of the company, but only from his own particular department. That is; the sociological expert was always at liberty to transfer any man who was fired to a place better suited to his capacity. The sociological superintendent should be a first-class man and paid a salary which would command respect. He would only fail if his salary failed to attest the confidence of the company.

On the day following, the coal men went to two mines at Nokomis, Ill., a trip of 72 miles each way. The two mines inspected were those of the Nokomis Coal Co. (Rutledge and Taylor) and the Kellar Coal Co. At the former mine the management provided a collation. Joseph P. Hebenstreit, the superintendent at the Nokomis mine, and Herman Perry, the general manager of the Kellar mine, piloted the visitors through the mine workings of the former mine, showing them the operation of a short-wall mining machine.

#### ADVANTAGES OF LOW-PERCENTAGE RECOVERY

The headings are driven 12 ft. wide, the chain pillars being 30 ft. wide and the "wing" pillars of the headings, usually called "barrier pillars" in Illinois, being 125 ft. wide. No pillars are removed.

The rooms are driven 30 ft. wide, and 30 ft. pillars are left between them. The coal recovery at this first and last mining is clearly quite inadequate, but if the surface is to be maintained and the depth, as at Nokomis, is 648 ft., no less support can well be left. The question of coal conservation needs to be taken up, but if coal is going to be left, it is better to leave 50 or 60 per cent. than 25 or 30, for there is always a possibility of recovering all the coal later where pillars are left large enough to maintain the surface intact.

The Nokomis Coal Co.'s mine has a fine concrete and steel landing, and electric storage-battery locomotives of Whitcomb and Mancha designs. For trolley-locomotive purposes 275-volt current is used. The Kellar Coal Co. has a splendid electric-hoisting equipment built and erected by the General Electric Company.

(To be concluded)



## Bituminous Operators Granted Increase

On recommendation of the Fuel Administrator, President Wilson, on last Saturday, amended his schedule of coal prices by adding 45c. to each quotation in the original order. In requesting the President to issue this order, Dr. Garfield made it clear that the advance simply is to cover increases in the wage scale. The accountants of the Fuel Administration and of the Federal Trade Commission had instructions to exclude from their computations any allowance which could be regarded as an indirect increase of the profits of the operators. Dr. Garfield's letter to the President reads as follows:

It is my understanding that in fixing provisional prices for the sale of coal, it was intended to allow a fair profit to the operators. The public does not desire, nor is it necessary to meet the present emergency, that the coal industry should be asked to make more of a sacrifice than may reasonably be required of all staple industries. Exorbitant profits only have been the subject of concern. It needs no argument to justify Congressional and Executive action against profiteering, when the people of the United States are called upon to make unusual sacrifices.

As a result of the conference held in Washington between the operators and the miners of the Central Field, an agreement was reached on Oct. 6 providing among other things, an increase of wages as follows: An advance of 10c. per ton to miners; advances ranging from 75c. to \$1.40 per day to laborers; an advance of 15 per cent. for yardage and deadwork.

This will result in an increase to miners of 50 per cent. and to the best paid laborers of 78 per cent. over the wages of Apr. 1, 1914. These increases are not in excess of the advance in cost of living for that period.

It is obvious that these advances in wages must be taken either from the operator or the consumer. On the assumption that the prices fixed yielded a fair profit to the operator, it is clear that if this increase of wages is to fall entirely upon the operators, their profits will no longer be fair, unless the result of the increase bears an insignificant relation to those profits. This question was submitted to me, as Fuel Administrator. It is not possible to estimate the exact effect of the proposed increases upon the prices fixed.

But the experts of the Federal Trade Commission and of the Fuel Administration have made as careful computation as the data in hand permit. I have asked these gentlemen to exclude from their computations any allowance which could properly be regarded as an indirect increase of the profits of the operators, and to make their calculations with the sole object in view of covering the increase in wages by interpreting the above proposals in terms of the prices fixed by you; that is to say, to advise me how many cents per ton on coal produced the proposed wage increases mean.

In reaching the conclusion that the prices of coal at the mine should be increased to substantially cover these wage increases, I have been influenced particularly by the provisions of the agreement intended to secure an increased and uninterrupted production of coal.

Under the provisions of the draft law, miners are not excluded as a class. Considerable inroads have been made, as a result of the first draft, upon mine labor. Moreover, the conditions surrounding the industry in ordinary times account for the fact that the average number of days work

in the year has been from 200 to 230 only. They also, in part, account for the fact that the average hours of labor per day have fallen considerably below the eight hours stipulated in wage agreements. It is the deliberate judgment of the best informed among the representatives of the miners' union, that if the miners now at work should labor in the mines eight hours during even five days of the week, there would be no shortage of coal. It is the purpose of the proposed supplemental agreement to secure an approximation at least of this result by means of fines automatically collected. These fines are quite distinct from the penalizing fines sometimes attempted to be imposed by employers for their own benefit.

In this connection, I beg to call special attention to the fourth item of the proposed supplemental agreement, namely, that

"Subject to the next biennial convention of the United Mine Workers of America, the mine workers' representatives agree that the present contract be extended during the continuation of the war, and not to exceed two years from Apr. 1, 1918."

I am assured that the next biennial convention will loyally and patriotically confirm this provision. I believe you may confidently rely upon the assurances of the representatives of the union upon this point.

In view of the foregoing considerations, I respectfully recommend that the prices fixed by your proclamation of Aug. 21 and such modifications as have been made pursuant to your order of Aug. 23 appointing a Fuel Administrator, for the sale of bituminous coal at the mines, be uniformly increased in the sum of 45c. per ton, subject, however, to the following exceptions:

1. This increase in prices shall not apply to any coal sold at the mine under an existing contract containing a provision for an increase in the price of coal thereunder in case of an increase in wages paid to miners.
2. This increase in prices shall not apply in any district in which the operators and miners fail to agree upon a penalty provision, satisfactory to the Fuel Administrator, for the automatic collection of fines in the spirit of the agreement entered into between the operators and miners at Washington, Oct. 6, 1917.

As requested in the foregoing letter, the President issued the following order:

The scale of prices prescribed Aug. 21, 1917, by the President of the United States for bituminous coal at the mine, as adjusted and modified, by order of the United States Fuel Administrator, to meet exceptional conditions in certain localities, is hereby amended by adding the sum of 45c. to each of the prices so prescribed or so adjusted and modified, subject, however, to the following express exceptions:

At this point followed, word for word, the exceptions cited at the close of Dr. Garfield's letter.

Prices in the Raton district of New Mexico were reclassified by the Fuel Administrator prior to the above order so as to be on a par with those of the Trinidad district of Colorado. The Raton field prices are the same now as for the rest of New Mexico, namely, for run-of-mine, \$2.40; prepared sizes, \$2.65; slack or screenings, \$2.15. The new prices will be: Run-of-mine, \$2.75; prepared sizes, \$3.25; slack or screenings, \$2.

Prices at Michigan mines were not fixed in the original order of the President, but prior to the issuing of



the 45c. increase, the Fuel Administrator announced mine prices for Michigan as follows: Run-of-mine, \$3.15; prepared sizes, \$3.60; slack or screenings, \$3.20.

Further classifications in other states were announced as follows:

Montana—New prices: Prepared sizes, \$3.60; slack or screenings, \$1.50. Old prices: Prepared sizes, \$2.95; slack or screenings, \$2.45.

Arkansas (Paris Field)—New prices: Prepared sizes, \$4.50; slack or screenings, \$2. Old prices: Prepared sizes, \$2.90; slack or screenings, \$2.40.

Illinois (McLean Coal Co., Bloomington)—New prices: Prepared sizes, \$4; slack or screenings, \$1.70. Old prices: Prepared sizes, \$2.65; slack or screenings, \$2.15.

Missouri (Putnam County and longwall thin seam mines in Randolph County)—New prices: Run of mine, \$3.15; prepared sizes, \$3.40; slack or screenings, \$2.90. Old prices: Run-of-mine, \$2.70; prepared sizes, \$2.95; slack or screenings, \$2.45.

## New England Shortage To Be Relieved

Despite the fact that New England has received considerably more than its normal supplies of coal, the situation in that section still is sufficiently acute to have caused the governors of five states to pay a personal visit to Dr. Garfield. As a result of their representations, the Fuel Administrator has issued an order which is explained as follows in an official statement:

J. J. Storrow, of Boston, the New England Fuel Administrator, is authorized to arrange for a supply of coal, at the President's prices, in less than car-load lots for cases of immediate and pressing exigency, under arrangements by which the Fuel Administration will subsequently return to the parties from whom the coal is supplied, the like amount and at the same prices.

To insure the uninterrupted operation of public utilities and important industrial plants, Mr. Storrow is authorized to permit sales of coal on storage in New England at wholesale upon the same basis of prices as that prescribed for sales by retailers in the order of the Fuel Administration dated Oct. 1, 1917. In both these classes of cases, the New England Fuel Administrator is authorized to act without previous consultation with the Fuel Administration in Washington.

Provision is also made in the order for approval by Mr. Storrow, after communication with Washington, of sales in certain cases of coal owned by jobbers, in order to meet cases of real necessity. The prices of coal in these cases must be approved by the New England Fuel Administrator and must not exceed cost plus the jobbers' margin prescribed in the President's order relative thereto.

It is believed that there are in New England in the hands of certain dealers and consumers surplus coal from which the owners would be glad to supply the needs of less well stocked users, if they could do so without loss to themselves. This order will clothe Mr. Storrow, as New England Fuel Administrator, with power to authorize such sales and to relieve many, if not all, cases of shortage in the important industrial plants, public utilities, and domestic requirements.

The governors who conferred with Dr. Garfield in the New England situation were Samuel W. McCall, of Massachusetts; H. W. Keyes, of New Hampshire; Carl E. Milliken, of Maine; Marcus W. Holcomb, of Connecticut, and H. F. Graham, of Vermont.

## How To File Cost Reports

No less than 500,000,000 tons of the country's coal production was represented at the Pittsburgh meeting called by the National Coal Association, according to an estimate made by J. D. A. Morrow, its general secretary. There were approximately 1700 companies represented at the meeting. The actual output of 643 of the companies represented is known to be 305,000,000 tons. Exact figures were not available, however, for the remaining more than 1100 companies, but Mr. Mor-

row calculates that their combined output will easily raise the total tonnage represented to 500,000,000 tons. Mr. Morrow, on his return to Washington, declared that the meeting had been a greater success than any one had anticipated. He believes that it now will be very much easier to obtain concerted action in regulating transportation, in securing greater efficiency from labor and in attempting to solve the many problems which are confronting the industry. One of the purposes of the meeting was to give the operators an opportunity to know Dr. Garfield more intimately.

It will save much unnecessary work, Mr. Morrow points out, if coal-mining companies will refrain from changing their bookkeeping methods until a more satisfactory form for cost returns has been devised. The work of the committee on cost accounting at Pittsburgh shows very clearly, Mr. Morrow says, that a revision of the Federal Trade Commission's form is necessary. The committee worked up a revised form to submit to the commission (see *Coal Age*, Oct. 27, p. 730). During the meeting at Pittsburgh, Mr. Morrow was asked whether companies, in filling out cost reports to the Federal Trade Commission, should include items and charges called for on the Trade Commission's blank, but which they have not been in the habit of carrying on their books. Mr. Morrow replied to this question by saying that it is the desire of the Federal Trade Commission to secure accurate figures, but where an item is called for which has not been taken into separate account by a coal company the best estimate should be made. These estimates should be entered upon the blank in different ink. A note should be made explaining the entry.

## To Relieve Railroad Congestion

Retail prices, emergency supplies, car supplies, conservation of fuel and state organization were the chief topics discussed at the meeting last week of the state fuel administrators, called by Dr. Garfield. During the discussions, it became very evident that it is the consensus of opinion among the state fuel administrators that a portion of the traffic must be taken off the railroads. Even if more cars were available, many believe, it would not be possible to get them through to destination. The opinion was expressed at the meeting that considerable traffic could be taken off the railroads without important losses, which would do more to improve the transportation situation than anything else that can be done. It was stated that in the East alone, where congestion is acute, an average of 2000 cars of road-making materials are being handled daily. It is believed that a considerable portion of this tonnage could be denied movement in order to make more effective the transportation of more needed materials.

In many states the railroads are being compelled to abolish grade crossings, while numerous municipalities are requiring track elevation. Work of this kind requires many cars and locomotives, impedes traffic at those localities and requires labor that is much needed in more important work. It was suggested that the railroads be relieved of all but the urgently needed improvements at this time. In order to avoid confusion, all emergency distribution of coal will be handled by the Fuel Administration in Washington.



## Coal Output Takes a Drop

Coal production for the week ended Oct. 20 fell sharply below the production of the corresponding week of 1916. This is the first time since February that the 1917 production has not been in excess of that of 1916. The total coal production for the week ended Oct. 20 was estimated by the Geological Survey as having been 9,880,801 tons. This was a loss of 8.2 per cent., as compared with the week previous. Anthracite shipments decreased from 42,824 cars, which were shipped during the week ended Oct. 13, to 42,590 cars in the week ended Oct. 20. Beehive coke production during the week ended Oct. 20 was estimated at 624,013 tons.

## Open-Top Cars for Essential Products Only

Unexpectedly prompt action was taken by the priority committee on the very general insistence on the part of the coal industry that open-top cars be reserved for the transportation of coal and such other urgently needed commodities as could not be readily handled in other types of equipment. The situation was met by priority order No. 2, which became effective Nov. 1. The salient portion of this order, which is signed by Robert S. Lovett, reads as follows:

Whereas it has been made to appear and the President, through the undersigned, finds that open-top cars (other than flat cars and cars assigned to work service) suitable for the transportation of coal, coke, ore, limestone, sugar beets, sugar cane, sorghum cane, and raw materials for use in the metal, sugar and fertilizer industries, and other commodities necessary to the national defense and security are being utilized in the transportation of the less essential commodities and articles hereinafter specified to such an extent as materially to interfere with the transportation of the aforesaid commodities required in the conduct of industries necessary in the prosecution of the present war, and that it is necessary for the national defense and security that priority should be accorded coal, coke, ore, limestone, sugar beets, sugar cane, sorghum cane, and raw materials for use in the metal, sugar and fertilizer industries and other commodities required in the national defense and security, in the use of such cars over the commodities and articles hereinafter mentioned:

1. Materials and supplies, other than coal, for the construction, maintenance or repair of public or private highways, roadways, streets or sidewalks.

2. Materials and supplies, other than coal, for the construction, maintenance or repair of theaters or other buildings or structures to be used for amusement purposes.

3. Materials and supplies, other than coal, for the manufacture of pleasure vehicles, furniture or musical instruments.

4. Passenger vehicles, furniture and musical instruments, which articles the undersigned finds are not essential to the national defense and security.

## Miscellaneous Washington Notes

Coal taken out of the ground at Leavenworth, Kan., is to be regarded as Missouri coal, according to a ruling by the Fuel Administrator. This ruling gives the Leavenworth operators an advance of 60c. a ton in the price they may charge for their product.

\* \* \*

Two prominent railroad men have been added to the staff of the Fuel Administrator. G. N. Snider, the coal traffic manager of the New York Central R.R., has been appointed as head of the transportation division, and A. S. Learoyd, general freight agent of the Delaware, Lackawanna & Western R.R., will represent the anthracite operators.

The Urbana, Illinois, station of the Bureau of Mines has been reorganized with the idea of increasing the amount of experimental work being done there. The principal problems being studied at Urbana are subsidence and mine fires.

\* \* \*

An effort is being made to increase the number of mines on the Navy's acceptable list. This has been made necessary by the heavy demands being made on the properties now on this list. The Bureau of Mines has been called upon to make the analyses which will be necessary and to report upon the capacity of mines likely to be eligible.

\* \* \*

No less than a dozen Government specialists are making studies of the occurrence of iron pyrite in coal mines. While there is some difference of opinion as to the possibility of producing any important quantity of pyrite from coal mines, it has been established positively that the recovery of pyrite at many mines can be made the source of sufficient revenue to add materially to the profits of operation.

\* \* \*

For the first time in their history, the nine anthracite railroads carried a gross tonnage of 52,291,445 tons of coal during the first eight months of 1917. During the same period of the year preceding these roads carried 44,623,063 tons of anthracite. This is an increase of 17.18 per cent. and gives a clear indication of the additional supplies of anthracite which are going into distribution. The movement of anthracite during June, July and August was particularly notable. As compared with the corresponding months of last year, the percentage of increase is as follows: June, 25.24; July, 24.38, and August, 28.35.

\* \* \*

After having listened last week to the appeal of the state fuel administrators of Ohio and Michigan for more coal, Dr. Garfield agreed to a suspension of priority order No. 1 for a period of twenty-four hours. The original order awarded priority to the transportation of coal for transshipment by vessel to ports on Lake Superior and Lake Michigan. The twenty-four hours period selected was from midnight Sunday to Midnight Monday. This permitted mines in Ohio, western Pennsylvania, eastern Kentucky, Michigan and a part of West Virginia to load coal on that day exclusively, to fill orders that they had from consumers and dealers in Michigan and Ohio.

## COMING MEETINGS

Illinois Mining Institute will hold its fall meeting Nov. 17, at Springfield, Ill. Secretary, Martin Bolt, Springfield, Illinois.

American Association of Mechanical Engineers will hold its annual meeting Dec. 4 to 7 at the Engineering Societies Building, New York City. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Coal Mining Institute of America will hold its annual meeting, Dec. 5 and 6, at Pittsburgh, Penn. Secretary, H. D. Mason, Jr., 541 Fourth Ave., Pittsburgh, Pennsylvania.

Kentucky Mining Institute will hold its winter meeting, Dec. 14 and 15, at the Seelbach Hotel, Louisville, Ky. Secretary, Charles W. Strickland, Sturgis, Kentucky.

## "In the Carbon Hills"

"In the Carbon Hills" is a beautiful romance laid in the heart of the bituminous coal fields in western Pennsylvania. The writer, William H. Reynolds, in this, his fourth book of romance, has drawn from his own experience when living as a miner among the people whose traits and characteristics he so truly describes.

The book teems with interest from cover to cover, the author having interwoven with the daily struggles of those who toil underneath the ground those softer elements of the human heart that tell of sympathy, veneration and love, and that make all mankind one in the sorrows and enjoyments of life. To read the book once is to turn back and read again many parts that help to broaden the mind and give the reader a truer insight into the aims, toil and hardships of a class of workers to whom the world must ever look for the production of what is the base of every industry—the source of light, heat and power.

Coming, as it does, in the present war crisis that makes the work of the miner one of the greatest importance to the people and the nation, this simple tale of life and love interwoven will be read with increased interest, not alone by the mining fraternity whose fortunes are cast in like surroundings, but by that great class of sympathizers who desire to know more of the inward life of those who toil and suffer underneath the ground.

Greater interest will attach to the reading of this book when it is known that, a few years ago, its author met with a serious and almost fatal electrical accident by which he was permanently disabled for further physical toil. Mr. Reynolds' talents and energy led him to devote what remaining strength came to him after several years of remedial treatment to writing these romances of his earlier mining experiences. This story of life, "In the Carbon Hills," like those that preceded it, "Our Brother's Child, and Other Stories," and "The Tide of Destiny," is based on facts—it is not fiction. The story is concerned with events of the first decade of the 20th century, and those familiar with mining events in those years will recognize the semblance of the facts narrated in the book to those that go to make up the history of coal mining in that period.

The many friends of Mr. Reynolds will unite in wishing him the greatest success in the sale of this book, which is a credit to its author, whose disability has not prevented him from still doing his little part to uplift and hearten his former fellow workers. The book contains 253 pages and is neatly bound in cloth; its price is \$1, postpaid. Subscriptions can be sent to the author, Box 403, Butler, Pennsylvania.

## Canadian Fuel Regulations

The Canadian government has authorized the regulations issued by the Fuel Controller respecting the importation and sale of coal, and these went into effect Nov. 1. Provision is made for the licensing of all importers and dealers in coal, who must apply for a permit before Nov. 21. Penalties are provided for doing business without a permit, and permits may be cancelled where any dealer has been found guilty of giving short weight, or where any other sufficient cause exists.

Every mine owner must enter into an agreement with the Fuel Controller fixing the maximum prices to be charged per ton. Brokers are allowed a maximum of 30c. per ton; wholesalers, 35c. per ton, and retailers, 50c. per ton. These profits will be allowed over and above reasonable overhead and handling charges.

Every two weeks an average will be struck by dealers of the cost of all coal on hand, which will be the governing price for the following two weeks. To prevent hoarding of coal, it is provided that except between April and September inclusive, no consumer shall obtain any quantity of coal in excess of an estimated supply for two months with a maximum allowance of three tons.

In case of emergency the Fuel Controller will have power to requisition any quantity of coal in the possession of any customer in excess of the legal supply. In working out this regulation, the mayor, reeve, warden or overseer of any municipality may be made the agent of the Fuel Controller. No charge is to be laid against any coal dealer or broker without first submitting the matter to the Fuel Controller.

## Mining Alaska Coal

The Government railway has tapped two or three producing coal sections of southwestern Alaska that are steadily improving in quality of output. Secretary Lane is quoted as stating that the coal fields already opened are larger and richer than the Government had at first anticipated.

Bituminous coal that is equal to the very good quality produced in West Virginia has been uncovered, and there are anthracite fields yet to be reached. Under the improved outlook the Government is to continue railroad construction, even though the expense of materials and labor is very much higher than estimated, on the theory that the saving to the Navy in using Alaska coal will more than repay the increased cost of railroad construction. West Virginia navy coal now costs \$14 to \$15 per ton laid down on this coast; Alaska coal of good quality can be loaded aboard ship for about \$4 or \$5 per ton.

The *Alaska Railroad Record*, published by the engineering commission, indicates three coal areas now in process of development. At the Eska creek mine, bunkhouses, a powder house and primer house have lately been completed, and also a loading trestle and coal pocket for loading engines. An office building has been erected, five acres of land have been cleared, and cottages are under construction. Coal is being taken out of the Martin coal bed, and 2905 long tons were shipped to Anchorage in September. At the Chickaloon mine a crosscut is being driven and permanent improvements for mine operations are being completed. Around each of these mines a little community of schools, business houses and cottages is growing up.

It will be the policy of the Government to open the mines and get access to the coal as rapidly as possible. By late spring of next year the engineering commission expects to be able to deliver coal in substantial quantities to the Navy. With a \$10 saving on each ton of coal so delivered, Alaska fuel will begin paying back to the nation the substantial sums advanced for the development work.



# The Labor Situation

## General Labor Review

The three principal events to be recorded are the resignation of John P. White, resulting in the installation of Frank J. Hayes in his place, the arrangement for an increase in wage in nonunion districts and the disapproval of the Southwest penalty clause by the Fuel Administrator.

John P. White, whose service would have come to an end in December, resigned from the presidency of the United Mine Workers organization, Oct. 25, to assist the Fuel Administrator, Dr. H. A. Garfield, in his work. Though Mr. White, by starting strikes in all the nonunion regions on the entrance of this country into the war, threw a doubt on his patriotic purposes, nevertheless he has shown himself in other ways both patriot and statesman, and one is in a quandary whether to rejoice that his services are now to be given to the Government or to regret that he has ceased to serve the best and legitimate interests of the mine workers by acting as their prudent and worthy president.

About his successor, Frank J. Hayes, little but good is known. He has been a stalwart supporter of John P. White and will doubtless carry on his policies, maintaining peace with honor.

### Nonunion Mines Can Secure Price Increase

Mr. Garfield's arrangement, by which 45c. was added to the price of coal in those fields where a wage agreement providing a satisfactory penalty clause had been made, did not look well to the nonunion operators who had no agreement of any kind, and therefore by the terms of the Government ukase could not raise their prices however much they might be compelled by competition and strikes to readjust their wage scales. However, Mr. Garfield gave the nonunion operators an attentive hearing and decided that operators in nonunion districts might collect fines if strikes were called and turn the money over to the Government for the use of the Red Cross. Where mine workers were locked out without cause, the Fuel Administration declared its intention to fine the operators, giving the money thus collected to the Red Cross. It does not appear whether operators who compound with their striking mine workers without fining them for striking will themselves be subject to a fine.

### Garfield Objects to Lame Southwest Agreement

Apparently, the Fuel Administrator is not satisfied with the penalty conditions in the Southwest. That region is a hotbed of industrial sedition. Strikes arise from many and often unheard of causes. New demands from the mine workers unknown to any contracts so far signed spring up from day to day. The men are in a constant fervor of discontent.

As a result it is impossible to promise all the numerous malcontents in the various insignificant coal camps immediate consideration of their petty grievances. If then, these vain objectors to everything and nothing are denied immediate juridical service, they are by the terms of the agreement allowed to strike to their hearts' content. Even if without this insufficient cause they go on strike, the fine is small—only 50c.—and the period during which it is payable is short.

The Fuel Administrator does not seem to regard the Southwestern agreement as in any way satisfactory and may refuse to concede the 45c. increase to the operators who have signed it, thus signifying to the men they employ that they cannot have a wage increase till they bind themselves unmistakably to keep their contracts.

The Fuel Administrator demands that the union mine workers immediately sign contracts satisfactory to him. He is now firmly aroused and will not stand for any nonsense.

The differences between the mine workers and the Oklahoma Coal Operators' Association now rest in the hands of four men, known as the scale committee. These four men—E. W. Hogan and Robert Blackbird, representing the operators, and E. F. Ross and B. F. Clevenger, looking after the mine workers' interests—have been in session at McAlester, Okla., but have reached no agreement.

According to representatives of the operators, it is believed an early settlement will be made, the only hitch remaining being the penalty clause. E. F. Ross, who is secretary of district No. 21 of the United Mine Workers of America, said: "I look for an early settlement and do not think there is any danger of a break. The penalty clause is all that is keeping back a settlement." The strong action of Dr. Garfield is quite likely to resolve the doubts of the mine workers and to cause them to run for the nearest cover.

## No News Is Always Good News

The anthracite region is to be congratulated on the barrenness of the field for labor news. Let us hope that in the period of the war a dearth of news may continue to mark the anthracite region.

However, it is only fair to state that we hope soon to record an increase in wages in the anthracite region. We wish the anthracite miners and mine workers generally an increase in wage similar to that already granted in the bituminous regions. On general principles we did not approve of increased wages at this time in bituminous mines, for the cost of living had already been met by wage rises, work was more plentiful, if not as measured by days at least as measured in mine cars, which is indeed the true test. The number of days is not the correct criterion; it is the number of turns per week or per month. However, it was decided that the mine workers in the bituminous mines should receive more pay, and surely the anthracite worker is every bit as much entitled to it.

The strike at the collieries of the Lehigh & Wilkes-Barre Coal Co. at Audenried, Honey Brook and Green Mountain, which involved 2000 men and related to the separation of slate from coal at the face of the breast, ended on Oct. 24, a satisfactory adjustment having been reached. The strike had lasted 4 days and had lowered the output 10,000 tons.

Meanwhile there is a force more closely in accord with modern ideas and aims, a Conciliation Board which settles affairs by contract and reason and not by industrial clashes. Some are still willing to wait for, and listen to, its mandates in accord with the requirements of the contract. The contract binds the operator to the Conciliation Board; it should bind also all his employees. C. P. Neil, the umpire of the Conciliation Board, has decided that piece-work men who are confronted with the necessity of doing unusual extra work in the performance of their regular duties must be paid for that labor whether the company officials ordered it to be done or not. The case occurred at the Delaware & Hudson Co.'s mine, Coal Brook. The men found they had to take up a "bottom shelf" of rock in some of the beds. The company contended that the rates paid for the coal getting covered the lifting of this bottom shelf wherever it occurred. The company also stated that no order had been given to the miners to remove this rock. But Neil decided that it must be paid for nevertheless, because the lifting of it was necessary and not anticipated in the contract.

## At Last, Garfield's Back Is Up

At the conference held Oct. 31 at Washington between the Association of Coal Operators of Central Pennsylvania and the United Mine Workers of District No. 2, progress was made toward a settlement. The presidents of the two associations called upon the Fuel Administrator to discuss details and were informed that if the operators and miners get together promptly, and compliance is made with the provisions of the President's order of Oct. 27, the increase in wages will become effective on Nov. 1. The Fuel Administrator made it plain that if there is undue delay in reaching an agreement, or a cessation of work at these or other mines, he will not consent to the proposed increases.

## Nonunion Strikers To Be Fined

On Wednesday, Oct. 31, Dr. Garfield explained to a committee of coal operators from the nonunion fields how he expects the penalty provision to be applied. He has directed that the following notices be posted:

The United States Fuel Administrator has directed that if any mine worker or group of mine workers in any way interrupts the operation of the mine or causes a strike, the operator shall deduct from the earnings of each employee, except those who continue at work, the sum of \$1 per day for each day or fraction thereof that such mine worker fails to report for duty. All questions arising under the foregoing provision are subject to review by the United States Fuel Administrator.

If a mine is closed or the men locked out by an operator, without just cause, the United States Fuel Administrator will impose upon and collect from such operator a fine at the rate of \$1 per day for each mine worker affected.

All fines imposed under this order shall be paid to the American Red Cross through the United States Fuel Administrator.

Every mine operator shall file with the United States Fuel Administrator regular reports, on prescribed forms, giving him such information as will enable him to enforce the foregoing order.

The committee that pointed out the situation in the non-union fields, which by the way produce one-third of the country's coal, was headed by J. D. A. Morrow, general secretary of the National Coal Association. Other members of the committee were: S. Pemberton Hutchinson, Irwin Field; A. R. Hamilton, Central Pennsylvania Field; John K. Shaw, Fairmont Field; C. N. Strevell, Utah Field; George Wolfe, Tug River Field; Alexander Bonniman, Hazard Field; R. L. Wildermuth, Logan, W. Va.; A. W. Calloway, Maryland Field; George W. St. Clair, Clinch Valley Field, W. L. Cole, Georges Creek Field, and T. W. Guthrie, Somerset County Field.

## Weeding Out the Culprits in Illinois

With all the Illinois miners who were on strike last week back at work, a vigorous investigation has been started by the state officials to hunt down and expel from the union the agitators who are responsible for the strike which tied up for a week practically all the mines in the state. President Frank Farrington, in a statement issued at Springfield, declared that the agitators responsible for the recent troubles in the organization would be driven out as soon as the evidence against them is complete.

"I have the names of most of these men who have outraged every law of the union," he said, "and I have the support of an overwhelming majority of the rank and file in the union in taking drastic action against them. The majority of the men are for discipline, and those who are not willing to obey the rules of the union cannot hold membership in it."

Three mines in Franklin County were the last to resume. An ultimatum from President Farrington brought them to time. He warned them that the charters of the locals involved would be revoked unless the men returned to work at once.

Farrington insists that 80 per cent. of the miners were opposed to the strike, but he does not explain how, when the question of a strike was raised, the votes of 20 per cent. could outweigh the votes of four times that number. The fact seems to be that when the local unions decided on a strike a large minority opposed it, but they were cried down by the majority, who thought they could compel the Government to grant the operators increased prices to countervail the wage increases provided in the Washington agreement. As has been noted in previous issues, these wage increases were made contingent on an increase in price being granted to the coal producers. After the strike began, under threats of industrial conscription and expulsion from the union, the majority shifted and the men voted to return to work.

The men who started the strike and were the leaders in it are denounced by the state officials as enemies of the union and of the country, and it is certain that they will be dealt with drastically.

The Springfield miners, at the mass meeting at which they voted to return to work, adopted resolutions demanding of Administrator Garfield that Government control and operation of the mines be inaugurated as the only means of permanent peace in the mines. The meeting also demanded that a state convention of miners be called to consider the Washington agreement, which was denounced as in violation of the union constitution. It was declared that the union officials in making that agreement without action upon it by a convention of miners were overriding the constitution.

The force of this complaint was considerably impaired by the fact that the men making it had overridden the constitution by several unauthorized strikes and by the fact that the Washington agreement was a concession of the operators which the mine workers could not reject if they would without violating their own contract.

The primary ballot for the nomination of officers in the Illinois miners' organization indicates that the majority of the miners now support their state officers in their stand on the strike question. The present officers were renominated by large majorities. One hundred and sixty local unions voted to renominate Frank Farrington as president. Only 44 were found to vote for Frank Hefferly, of Collinsville. Vice President Harry Fishwick was renominated by 150 locals, and only 39 voted for Dan Pollock, of Belleville. Walter Nesbit received the vote of 181 locals for renomination as secretary-treasurer, while 54 voted for A. Wieck, of Staunton.

## Washington's Contract Difficulty

No agreement has yet been reached between the Washington Coal Operators' Association and the wage-scale committee of District No. 10, United Mine Workers of America, representing more than 6000 miners of the state. All the mines are affected as all are being operated under union conditions.

The increases asked by the Washington mine workers are based on the agreement reached in Washington at the interstate joint conference of mine operators and mine workers in the Central Competitive Field. This agreement provided for an increase of 10c. a ton, 15 per cent. in the prices for yardage and deadwork and \$1.40 a day for adult day laborers.

The principal difficulty the mine workers and operators have met in the negotiations so far is in agreeing upon a fair apportionment of the 10c. increase. Coal is mined under different conditions in the state, and the miners contend that a general advance of 10c. a ton would not be fair because the prices now paid the miners vary from 60c. to as much as \$1.25 a ton. This being the case, a 10c. advance would give the 60c. men a large percentage increase and provide only a meager increase to the men who now are paid \$1.25 per ton. However, uniform specific increases alone provide for the continuance of industry in mines where the great difficulty in producing the coal has caused a high tonnage scale to be paid. A mine cannot give a 20c. increase where a rival mine gives only 10c.



## Editorials

**D**ID you ever sit down to write a memorandum on the coal industry for the calendar year? Did you ever try to record the mining progress of the last twelve months? If you had tried to write such a summary of negligible items, you would have found that the progress is pitiful. Over decades there is some advance, it is true, but in no one year can we point to any large achievement. We go so slowly from precedent to precedent.

Part of all this lack of development is due to labor. The laboring man has not been brought to the point of wishing and seeking a new manner of operation. He is rather suspicious of it all. A new manner of flying, a new way of submarining, a new method of aquaplaning arouses enthusiasm, but a new manner of mining, a different system of working, finds him cold.

The trouble with him is in lack of technical education. We are told that education is "learning things." Rather it is learning enthusiasm for things. Education is the getting of a start toward inquiry and progress or it is not education at all, for education rightly is the "leading out" of the mind from half beliefs and half conceptions into a larger viewpoint.

\* \* \*

**U**NFORTUNATELY, what little education in mining matters there has been around coal camps has been class education. The aim has been to make a lot of enthusiastic mine foremen who would, as a result of the "leading out," acquire an enthusiasm for efficiency, output, safety (it should be first) and economy. They get the enthusiasm and the knowledge, but it is class enthusiasm and class knowledge.

In fact it is so closely confined to the few, that the rank and file in the mine seem to regard it as a pleasure to resist all that the enthusiasm of the mine foreman would create. What is needed is mass education. It is worth while creating it. We shall never have a good mine so long as we have all the interest in safety, progress, economy, efficiency and management centered in two or three men.

These desirable entities will only come when we have team play. They will only arrive when every man in the mine has been brought to take part in the game himself. Nowadays, all the industries are getting their trade schools. Cleverly and methodically arranged, these schools prove extremely attractive, and they give the workman a new idea—"What is worth preparing for, is worth doing well."

\* \* \*

**T**HERE should be no "common labor" or "common laborers" in this world. Every one should be a specialist, and this should be true in the mine. The miner should have his ribs in the line of sights, his neck ended at exactly the right point, his props set with workmanlike precision, his track laid without turns or twists or humps, his face square and of right width, his undercut properly spragged, his shot at the correct

angle, of the right length, properly charged and safely tamped with clay. It should be a principle to do things the right way, the safe way (again, that should be written first) and the efficient way.

Miners should learn that this is a duty not to the operator but to themselves, their wives, their families and the public at large. They should learn that the public needs can only be secured by every man doing his bit of the whole large work that must be done if the world at large is to be clothed and fed. This should be the training of the schools. But it must always be enforced by the example of the operator and his aids.

If the school teaches the pupil to have an enthusiasm for his work, he will welcome a new and better way of doing it. The workman trained in the school will be willing to divide with the operator the profit of new methods of operation. Men who regard their work as a real vocation, who delight in it, are willing to try even at a loss some new way of performing an old trick; and a man only partly inculcated, only reasonably inculcated, into this better way of thinking will be willing to make a fair and honest division of the profits that will arise from the inauguration of a new system or a new machine and certainly will give it a fair trial.

\* \* \*

**H**OWEVER, one who has traveled around with the American Institute of Mining Engineers from metal mine to metal mine and seen how day work, despite high wages, permits of low cost in the extraction of mineral, one who has made a careful search of metal-mine records and found how cheaply other minerals are mined as compared with coal, is disposed to question whether the last word to utter is not a diatribe against piece work, at least against piece work as practiced in the coal mines.

There is an explanation needed from the coal industry when it is shown that the Alaska Gold Mines Co. can produce quartz rock from an underground mine for 38.4c. per ton with the Alaskan wage scale to contend with. That was the price in 1916. The ore breaking cost 29.3c. per ton, mine tramming 6.5c. and ore transportation 2.6c. per ton. The price for orebreaking, which includes loading and all other like costs, is almost unbelievable.

\* \* \*

**I**N THE future there is likely to be a movement toward day labor. The men will be given a better opportunity to work efficiently; they will receive the most efficient tools; they will be intelligently supervised; they will receive every facility in operation—and they will produce. They will be willing to do their work as ordered because they will make as much doing it in that way as in any other way.

No longer will they be kept waiting for cars; waiting for props; delayed by smoke; nor will they sit around when a switch is put in, but will help to shape up the rib and the clay to fit the turn. The job system is a

poor system. It is predicated on inefficient supervision and dishonest unenthusiastic men. An intensive system and good men will make day labor the more profitable way to run a coal operation.

But if that is not favored, try the duplicate system like the railroads; pay a man so much per day and so much per unit of accomplishment. The payment per day will give you a profit on the advantages you afford the workmen, will pay you for all your endeavors to make him a better producing unit, while the payment per unit of accomplishment will give him an inducement to do a good day's work.

### Spontaneous Stockpile Fires

**I**N THE present time of coal scarcity it is interesting to note that some firms holding contracts have been enabled to accumulate appreciable stocks. In several instances of late fires have broken out in such stockpiles. Some of these fires have required considerable time and the expenditure of sizable amounts of money to get under control.

It would appear that such fires might originate from one or the other of two causes—incendiarism or spontaneous heating. While it is doubtless true that destruction of its fuel reserve would be a quick method of at least embarrassing a railroad or an industrial coal consumer, yet it is believed that most of the stockpile fires that have developed recently have been due to spontaneous combustion. In order to escape detection in the early stages of such a fire, the incendiary would be constrained to work with extreme wariness. Coal stocks are usually guarded. Furthermore, a firebug would necessarily be compelled to work upon the exterior of the coal pile, or from the outside inward. Spontaneous heat on the other hand is invariably most intense in the interior of a pile, and it is well below the pile surface that firing starts from this cause.

As is well known, freshly mined bituminous coal of any variety possesses a more or less marked affinity for oxygen, and the absorption of this gas by the coal is accompanied by an increment of heat. If this heat is not dissipated as rapidly as it is generated, a rise in temperature ensues. This rise in temperature renders possible an increase in the rate of absorption of oxygen by the coal. Thus the more a coal heats the more rapidly may it heat. If the temperature rises beyond a certain critical point, serious results may follow.

The rise in temperature of stocked coal may be hindered and retarded by many circumstances. Water adhering to the surface and soaked into the structure of the material to a slight extent must be evaporated before any dangerous rise in temperature is possible. Consequently, the critical temperature is ordinarily about 180 deg. F., since at about this temperature the moisture in the coal pile dries out quite rapidly. Once the coal is dry it may heat speedily and soon attain a temperature where actual ignition takes place.

It was formerly considered that sulphur in the form of iron pyrites was the substance in coal that caused spontaneous ignition. Experiments would indicate, however, that this sulphur compound while doubtless to some extent aiding in the heating process is not entirely responsible for it. Many coals that do not contain pyrite in appreciable amounts will fire spontaneously if conditions conducive to such ignition are present.

The conditions under which coal may be stocked without danger of spontaneous ignition vary with the kind, size and condition of coal. Fine coal, since small particles spread more surface to the air in comparison to their weight than do large ones, is much more liable to heat than are lumps. Consequently, sized lump coal may be stocked with safety to a much greater depth than may slack or run-of-mine.

The percentage of voids in a coal pile also probably plays an important rôle in spontaneous heating. Of course, if there were no voids in a coal pile there would be no circulation of air, no oxygen would be absorbed and consequently no heating would develop. On the other hand, if the percentage of voids is large (probably 40 to 50 per cent. in unpacked sized lump), the circulation of air is free and whatever heat is generated is rapidly dissipated—that is, carried away by the air. Somewhere between these two extremes there is a condition where the heat generated by oxidation is not carried away with sufficient rapidity to prevent an appreciable rise in temperature. This heating effect is cumulative, since the coal oxidizes more rapidly at a high than at a low temperature.

No fixed and definite rules for safely stocking coal can be laid down. In general, however, the following considerations should be borne in mind:

Freshly mined or freshly broken coal heats more readily than does coal long mined or not freshly broken; consequently, a coal that does not break easily, or one that has undergone a long railroad haul, might be safely stocked to a greater depth than a freshly mined and friable coal of the same chemical composition.

Lump coal, especially sized lump, may be safely stocked to a greater depth than run-of-mine or slack.

Stocking coal under water is a sure and positive preventive of spontaneous combustion in the stockpile.

Experience would indicate that in outdoor storage run-of-mine coal of almost any variety may be stocked to a depth of 3 to 4 ft.; freshly mined or freshly crushed slack of almost any variety stocked to a depth of about 10 ft. is liable to heat, and some varieties thus treated are almost sure to fire if left undisturbed.

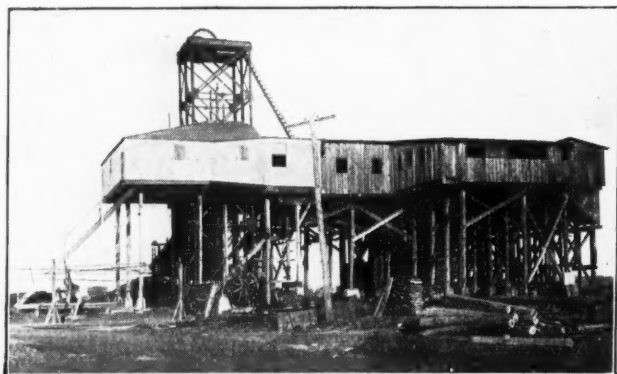
### Patriotism in Anthracite Region

**I**T IS for our country's need that we must produce, for the benefit of the public good. Therefore, cultivate patriotism; therefore, preach altruism. In their patriotic devotion the anthracite operators had flag raisings and speech making as a means of expressing the sentiment that animated them. As a result the anthracite mine worker, though 40 per cent. foreign, is buying bonds and mining more coal than ever. Had the bituminous operator been half as patriotic as the anthracite operator, or at least shown his feeling half as clearly, he would not now be complaining so much and so truthfully about the unwillingness of the employee to do the best that is in him.

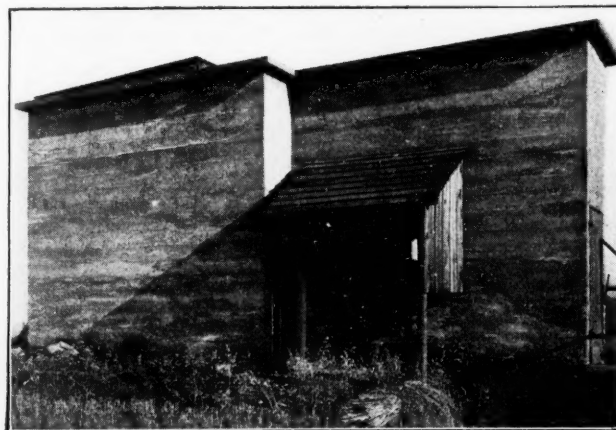
There is patriotism, there is service in us all. Only let care be taken to tell us our duty to our country, and we will all serve with devotion. The work of rousing the public of mining towns should never have been left to chance or to the local newspapers. Time should have been given to the work. A day or two of idleness at the mine would have set the people right on the matter.



## Snapshots in Coal Mining



TIPPLE AT KOLB MINE, MASCOUTAH, ILL.

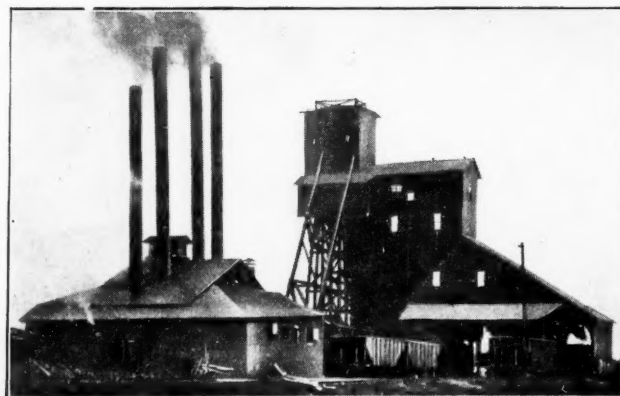


CONCRETE FAN HOUSE AT KOLB MINE, MASCOUTAH, ILL.

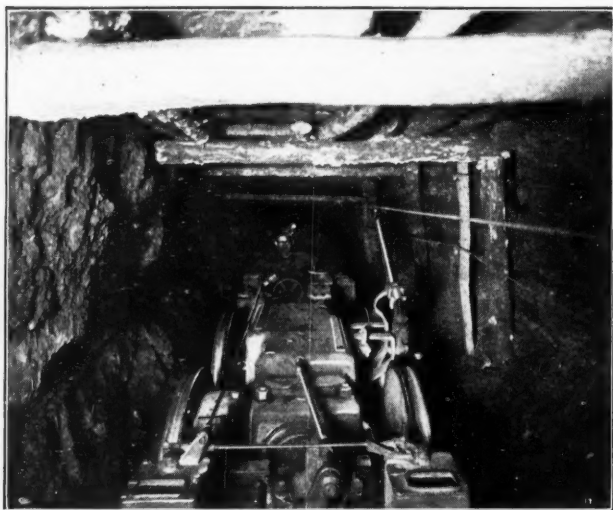


DELAWARE, LACKAWANNA & WESTERN AUCHINCLOSS  
BREAKER

First electric-driven anthracite coal breaker



POWER PLANT, GLEN AYR COAL MINE, TERRE  
HAUTE, IND.



GOODMAN LOCOMOTIVE AT THE WABASH MINE OF THE  
WESTERN INDIANA MINING CO., TERRE HAUTE, IND.

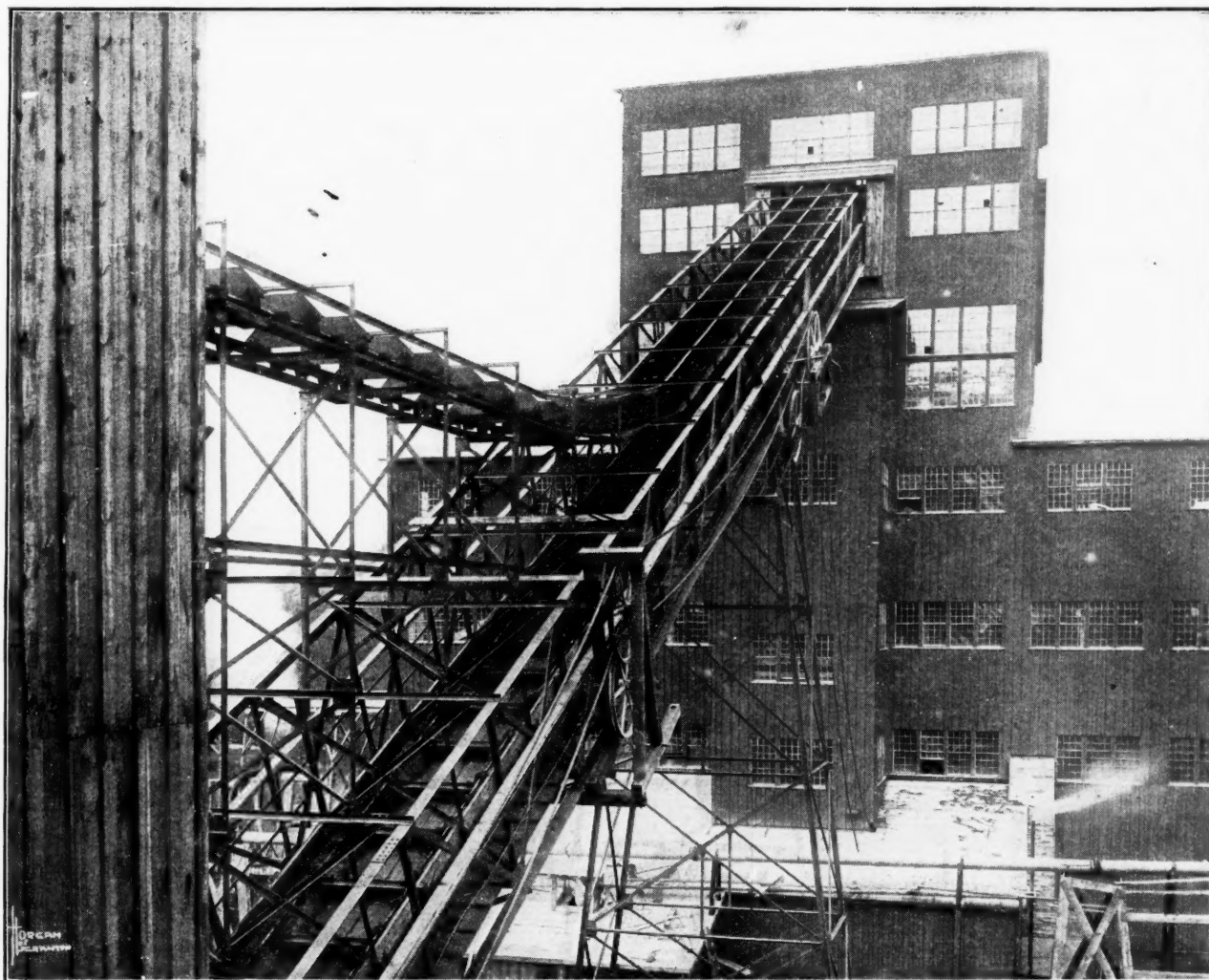


PIVOTING ROCK DUMP TRUCK AT LYKENS COLLIERY,  
SUSQUEHANNA COAL CO., LYKENS, PENN.

Illustration shows car in dumped position and safety device thrown so as to prevent car from dropping back. These cars are thrown in dumping position when run on dump and before dump truck is run from pier, allowing the men plenty of room to stand aside during the operation. Should any accidents occur the car remains in this position until it has been dumped and returned to the pier. The lowering of the car gives it momentum enough to run off the dump. In the background can be noticed an empty truck at pier



OFFICE, STORE, MINERS' BOARDING HOUSES AND PART OF TOWN OF ECCLES, W. VA.; NEW RIVER COLLIERY CO.



STEEL COAL CONVEYOR, DELAWARE & HUDSON BREAKER, OLYPHANT COLLIERY, OLYPHANT, PENN.



## Discussion by Readers

### Shotfiring in Mines

*Letter No. 1*—In his letter on "Practices in Blasting Coal," *Coal Age*, Oct. 13, p. 645, U. S. Wilson gives, as the main reason for the employment of shotfirers, the fact that since these men are supposed to fire the shots singly, slowly and in rotation in order to allow sufficient time between them for the dissipation of the gases and the settling of the dust, there would be much less danger of an explosion than if all the shots, perhaps several hundred, were to be fired by the miners in a few minutes at the end of the shift. That such a procedure would produce, at practically the same time and in the presence of flame, great quantities of explosive gases and dust clouds throughout the workings is certain.

In saying that the wholesale firing of shots in a coal mine is more liable to produce an explosion than the firing of shots singly and at intervals sufficient for the removal of the gases and the settling of the dust, Mr. Wilson is only rehearsing what we read in all textbooks on mining and mine explosions. This view is so plausible and the explanation offered in its support appears so reasonable, at first glance, that it has seemed useless to question its correctness or to spend time and effort in attempting to verify its truth. The result is that the statement in the textbooks has been and still is generally accepted as true. But, further inquiry into the matter promises to show that the textbook writers were mistaken in their conclusion.

Careful study of the character of the mixture of gases liberated by the ignition of black powder leads to the conclusion that such mixture, according to the results of laboratory tests, contains about 32 per cent. of carbon dioxide and is incapable of promoting or maintaining an explosion. I have good reasons for offering the suggestion that the presence of this mixture, in fairly large quantity, will have a decided quenching effect on the flame of an explosion that is already under way.

In view of this and for other reasons that I will not mention at this time, it appears that if the occurrence of explosions is sought to be lessened by the method of firing shots alone, the process advocated by Mr. Wilson should be reversed and all the shots, in all parts of the mine, should be fired simultaneously and not singly, or firing should proceed in one section of the mine at a time.

JOHN VERNER,

Chariton, Iowa. Former State Mine Inspector.

### Working Pittsburgh No. 8 Coal

*Letter No. 5*—The working of the No. 8 Pittsburgh coal seam has long perplexed the mining fraternity, as far as preventing squeezes, creeps, falls of roof and the extraction of pillar coal are concerned.

An experience of several years, in working this seam, along the Ohio River, has convinced me that there has

been little improvement made in the methods employed to overcome the difficulties that are particularly annoying in this section. It is true that some new methods have been adopted, from time to time, but these have only been partially successful.

The particular characteristics of the Pittsburgh No. 8 seam that render the mining of this coal more difficult are the nature of the roof and floor, which are composed chiefly of fireclay and an admixture of lime. This formation is particularly susceptible to the climatic conditions of temperature and moisture.

The greatest trouble is experienced in the summer months when the tendency of the roof and floor formations to swell is greater than in the winter season. Trouble of this sort is more apparent on the intake entries, close to the mine openings, and the resulting roof falls are not as frequent in the interior workings of the mines. I have found that the creeping or heaving of the floor can be prevented almost wholly by increasing the size of the pillars supporting the roof and protecting the entries.

#### INSUFFICIENT PILLAR SUPPORT A COMMON ERROR

My observation, during several years, leads me to think that engineers have made the common error of laying out these mines according to the same plan, which they have observed was the practice in the immediate vicinity. In other words, they have followed the example set by those who have preceded them. They seem to have exercised no judgment of their own in regard to the size of pillars required in the different sections. It would appear that nine mines out of ten are laid out with the same size of room and entry pillars, whether the covering is 50 ft. or 500 ft. in thickness. The thickness of the seam and depth of cover are factors that seem seldom to have been considered.

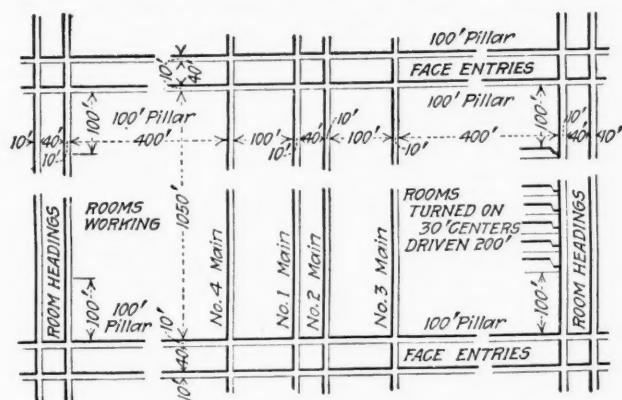
To make my meaning clear, let me suppose that a mine is started by a drift or slope opening where the cover is approximately 100 ft. thick. The development of the mine proceeds and entries and rooms are soon being driven under the mountain where the cover has increased to 500 ft. or more in thickness; but the pillars remain the same size as when the mine was first opened. Certainly, this cannot be claimed to be good mining practice, as it stands to reason that pillar supports should increase in size in proportion to the burden they must carry.

It is typical of mines operating in the Pittsburgh No. 8 seam that they are opened on the double-entry system, or a modification of that system, which permits an early extraction of the coal and the recovery of iron, ties, timber and other material, which were often lost in the use of earlier methods. If this seam gives off considerable gas, the tendency has been to use small pillars in both entries and rooms, which reduces the expense and labor of driving the necessary crosscuts for ventilation. Three machine cuts on each side of the rib

generally suffice, and no switch or track is required to load out the coal from the cut.

I have prepared a plan that will be found to give ample pillar support to all entries, including the main roads, face entries and room headings. The purpose of this plan is to prevent future losses and the annoyance caused by squeeze and creep, which always result when the pillar supports are insufficient for the protection of the openings. The plan shows four main entries, the two center ones being separated by a 40-ft. pillar and protected by flanking pillars 100 ft. in width. The two outer entries can be used as return air-courses, while the two center ones are the main roads and intake airways for the entire mine.

The face entries are driven to the right and left of the main roads and at distances of 1050 ft. apart. The room entries are driven off the face entries, at intervals of 400 ft. The rooms are driven on 30-ft. cen-



PROPOSED PANEL SYSTEM OF WORKING

ters to the right and left of the room headings. A feature of this plan, however, is that the face headings are protected by flanking pillars 100 ft. wide, as indicated in the figure.

Long observation and practice with machine mining, in this section, convinces me that a larger percentage of coal can be recovered when the rooms are not driven more than 200 ft. in length. This is about the limit of rooms under the weak roof in this seam. The saving in cleaning up falls, particularly at the present union prices, more than pays for the extra yardage required to drive the butt entries a little closer to each other.

The distance, 1050 ft., between the face entries, is an arbitrary distance that resulted from measuring the extent of our property and spacing these entries at equal distances apart to correspond to that measurement. I would suggest that, for the purpose of better fire protection, which is needful in the working of this seam, room entries driven to the right and left of the face entries should be stopped before they meet each other, say at a length of 500 ft. each. The 50-ft. barrier left between the heads of these entries will enable each section to be isolated and sealed off separately, should a fire occur that would make this necessary.

Wheeling, W. Va.

R. Z. VIRGIN, Supt.

*Letter No. 6*—It appears from the letter of E. O. Carney, *Coal Age*, Sept. 22, p. 509, that he has avoided the mistake so often made of opening up a new tract of coal land without first studying the conditions in the seam and getting together all the data that will enable

one to make a right choice of the method of working to be adopted.

From the description given of this seam and the difficulties encountered in working the adjoining mine, it is quite clear that the small pillars left in that mine were the chief cause of the heaving of the bottom. The soft shale underlying the coal would hardly be strong enough to resist even the comparatively slight pressure due to the 8 to 10 ft. of soapstone and 20 to 30 ft. of limestone overlying this coal. Not having made ample provision against squeeze, by leaving large pillars, it is not strange that much trouble was experienced by the heaving of the shaly bottom.

#### SUGGESTS THE RETREATING SYSTEM

Let me suggest, briefly, that I would open up this seam by driving a double entry on the butts of the coal, making the entry pillars 65 ft. in width. I would open rooms to the right and left of these entries, on 42-ft. centers, driving the rooms 24 ft. wide, which would make the room pillars 18 ft. wide. I believe that the rooms could be driven 250 ft. deep on the dip side and 300 ft. deep on the rise side of the entries, provided the seam has any inclination. Probably 85 per cent. of this coal can be mined by machines.

If practicable, the butt entries should be driven to the boundary line, before opening any rooms. The rooms should be started at the inby end of the butt entries close to the boundary and worked out on the retreating plan, drawing back the pillars as quickly as the rooms reach the limit. The entry pillars and stumps should also be drawn back as quickly as the rooms are finished, and all tee-iron and good timbers should be taken out and used in other places where they are needed. This plan will avoid the necessity of cleaning up old rooms, later, when the pillars are to be drawn back.

Should trouble be experienced by reason of water finding its way into the mine, immediate attention should be given to its removal. The water should not be allowed to spread in the workings or to accumulate on the roads, as this will give much trouble by softening the bottom and causing it to heave.

Wes<sup>t</sup> Leisenring, Penn.

R. W. LIGHTBURN.

#### Shaft vs. Slope Opening

*Letter No. 1*—Referring to the inquiry in regard to the most desirable form of opening for the working of a practically level seam lying 118 ft. below the surface and having no outcrop on the property, as described by Thomas Harris, *Coal Age*, Sept. 29, p. 551, permit me to say that, while there is probably no comparison to be made between a shaft and slope opening, in respect to the first cost of the operation, or the initial investment required to put the plant on a working basis, it will be generally allowed that there is a considerable difference in the later operating expenses.

Much will depend on the conditions and equipment, but it may happen that a slope opening will present advantages, in the operation of the mine, that will far offset the somewhat greater first cost of the slope as compared with a shaft. In the first place the sinking of a shaft is generally more difficult than the driving of a slope. The shaft must be kept plumb to insure the perfect running of the cages in hoisting. The work



requires special equipment of tools and material, much of which cannot be utilized in the later operation of the mine.

On the other hand, the sinking of a slope is an undertaking of which any experienced miner is capable. The work does not present the dangers of shaft sinking; repairs are more easily and quickly made, as required later; and the equipment, especially the pumps, is such as can be used in the further development of the mine.

The necessary arrangements, in respect to haulage, are more elaborate at the bottom of a shaft than on a slope bottom. At the bottom of a shaft, trips of cars arrive at intervals, the same as on a slope bottom. But, hoisting in a shaft requires that the cars must be uncoupled and handled one or two at a time. On the other hand, a trip of cars arriving at the bottom of a slope can be hoisted at once to the tippie, without any delay caused by having to uncouple the cars and handle them separately. In most cases bottom men will not be required on a slope, as a boy or the motorman can attend to coupling the trip to the slope rope.

#### ADVANTAGE OF ROTARY DUMP AND SLOPE OPENING

Again, while it is true that cars arrive, one or two at a time, at regular intervals, at the head of a shaft, while the trips hoisted from a slope reach the tippie at irregular intervals, which naturally causes some irregularity in dumping, even this objection is now largely overcome by the ability to dump an entire trip of cars at once, by means of a continuous rotary dump.

It will be granted generally that such an equipment makes the hoisting from a slope much simpler, both at the bottom and the top, than is possible in respect to a shaft. No uncoupling of the cars is required, but the entire trip is run into the long rotary dump, the turning of which deposits the contents of the cars in the chutes below. The dump is then righted, and the trip hauled back into the mine. This saving is only possible in hoisting from a slope. Even when an automatic dumping cage is installed in a shaft, the cars must still be uncoupled and coupled again at the shaft bottom, on each arrival and departure of a trip.

In closing, it may be of interest to mention the fact that, in some coal countries where native or black labor is employed, it is customary to sink slopes instead of shafts to reach level seams lying a considerable distance below the surface. This method of opening mines, in those countries, is preferred because there is not the same difficulty in securing labor, in slope mines where the men can walk in and out, as in shaft mines where they must be hoisted to the surface. There is often, besides, a difference in the regulations governing the working of shafts and slopes, which makes the slope openings preferable.

KAPPA.

Montreal, Canada.

### Qualified Mine Foremen

*Letter No. 5*—In giving a definition of the term "foreman," I want to make it stronger than that given in Webster, which seems to describe his outward appearance but does not get under his coat. My idea of a foreman is one who stands as "a man" among men—one who can command the respect and confidence of both employer and employees.

One's meaning is often made clearer by way of contrast, and my idea of what constitutes a *qualified mine foreman* will, perhaps, be better understood by a brief description of a mine foreman I once knew who was, I believe, as disqualified for the position he held as he was unfitted for good society and citizenship.

Standing 5 ft. 10½ in. in his stocking feet and weighing 227 lb., looking well informed and possessing a wide experience in coal mining, he was a man that would be regarded as capable of filling every requirement for the position of mine foreman. At the age of 25, this man was physically what many would consider a perfect man—strong as a lion, full of stored-up energy, bright and quick to learn, broad-minded and possessed of good judgment; he was a good mixer, a leader among his associates.

At the age of 45, when he should have developed a strong mind and body and have risen to a place of prominence in the town where he resided, we find him, instead, a physical wreck, notwithstanding his stalwart frame. Twenty years of dissipation have made him a big, flabby sot, red-nosed, blear-eyed, cross, irascible and profane.

As far as his knowledge of mining is concerned, this specimen of humanity is a qualified foreman; but how many operators would risk the influence of such a man over the other employees if given charge of a mine? As "water cannot rise to a level higher than its source," so nothing better could be expected of the men placed in charge of such a boss.

#### A HIT AT THE "EQUALLY COMPETENT MAN"

I am not arguing for a goody-goody or sissified foreman; but there is a happy medium in the choice of men for that position. With others, I have been surprised at the letting down of the bars, in regard to the employment of uncertified men as mine foremen, in Pennsylvania. Let me say, here, that a qualified foreman should know all that the "equally competent man" knows, of the Pennsylvania law *and then some*. Very few of these "equally competent" men are familiar with the requirements of the mining law, which should be the base of a man's knowledge who is fitted to act as foreman of a mine.

Besides the knowledge of the mining law, a foreman should understand the compass and have a practical working knowledge of the entire mechanical equipment of a mine. It is not necessary that he should be able to operate the different machines employed, but he should know what work each machine can do when properly handled and in good condition. He should know the value of good equipment to the extraction of the coal and operation of the mine.

A qualified foreman will study his employer closely, understand his methods and follow out his system and plans. He should not hesitate, however, to suggest what may appeal to him as promising better results, but, he will generally find that his superior in office is like the man from Missouri who must be shown facts in proof of the statements and claims regarding the proposed change. This, a qualified foreman will be able to do in support of his proposition.

By reading and studying continually, a qualified man will be able to handle almost any of the problems that arise in practice. His knowledge will not be, in every

case, gained by experience with a similar situation; but will rather be the result of his education and training.

Let me say, in closing, that comparatively few foremen may have to contend in practice with the many problems that are set forth, from time to time, in *Coal Age*, but the reading of these problems will make the man better equipped for meeting the same or similar situations when they arise in the mine. The qualified foreman is not the man who stops studying when he has passed the examination and obtained his certificate, but he continues to read and study all the harder.

Osceola Mills, Penn.

S. D. HAINLEY.

*Letter No. 6*—The discussion relating to the qualifications of mine foremen has recalled to my mind the system used in French mines, where all mine workers were graded according to their ability and intelligence.

The mines in France are under the direct charge of a mining engineer, a general inside foreman and as many district foremen and overseers as may be thought necessary to conduct the work efficiently. The foremen are chosen from the best practical miners, in a manner that I will describe. The word "miner," as there used, only applied to those men who had attained a first-grade rating in their work. The grading of all workers is conducted independently of any religious, political or fraternal influence. Every worker has the same opportunity to advance. The system is as follows:

#### A GRADED SYSTEM OF ADVANCEMENT

Boys enter the mine for work, at the age of 13 or 14 years. They are first employed as trappers and not permitted to work at the face until they are 18 years of age. A boy starts with a grade of 6½, which marks him as an apprentice, and the highest grade, attainable only by a competent miner, is 10. The wages are rated by the same scale, 6½: 10.

For two years after starting to work at the face, the helper is awarded a half-grade mark every six months, so that his grade, at the end of the two years, is 8½ if he has done well. From that time on, however, his advancement depends wholly on the success of his efforts and the ability he displays in performing his work. At the best, a man can scarcely attain a grade of 10 before he is 25 years of age, and many men never reach the ninth grade.

#### THE TRAINING AND DEVELOPMENT OF MINE FOREMEN

It is to the men who have attained the tenth grade that the mining engineer looks for his future foremen. Such men are able to do any job inside of a mine, whether in low or high coal and in flat or highly pitching seams, varying from a few degrees to vertical.

Whenever a few men are sent to perform a certain work they are placed in charge of a tenth-grade man, who is responsible for their safety and the work they do. No miner of a lesser grade than 10 is permitted to work alone, whether it be to clean up a fall, timber a place or lay rails or switches.

When a man who has gained the tenth grade is desired for the position of foreman, and agrees to work for the place, he must first undergo a period of training, during which time he will be given charge of special work that is more difficult and which will give him the experience required of a foreman. He may be sent to drive a tun-

nel through the rock to connect with another seam, or to sink a blind pit for the purpose of prospecting the underlying measures.

If the man makes good in the work he is appointed to do, he is later given a position as overseer under a district foreman. As overseer, it is the man's duty to come to the office every night to receive instructions on the theory and principles of mining, mine gases and ventilation. Should he show sufficient intelligence in this line, he may be appointed to the position of district foreman, in less than a year.

There is a great difference in the rapidity with which men advance, in the different stages required of them, before they can be chosen for the higher positions. I recall one instance of a man, who, at 30 years of age, became first manager of a mine where over 900 men were employed. There were overseers above 50 years of age working under his orders. This fact shows that choice was made of the most efficient men to fill the more responsible positions.

I do not want to be understood as being opposed to the certification of mine foremen. My idea is that certificates should only be given to applicants who, in addition to their technical knowledge of mining, show that they have had a good practical experience in all inside work, and are qualified to assume the responsibilities pertaining to the position of mine foreman. Since coming to this country, it has been my desire to take the examination and secure a certificate of competency, and I expect to do that as soon as I can obtain my citizenship papers. I want to be fully qualified in every way to fill the position of foreman.

GASTON LIBIEZ.

Peru, Ill.

## The Handling of Men

*Letter No. 2*—The Foreword in *Coal Age*, Sept. 8, touches upon a very important item in the successful conduct of any operation. Experience has taught us that to handle men successfully it is necessary to cater somewhat to their likes and dislikes.

Always, the work in hand depends as much on the worker as upon the capital that furnishes the material and means for its performance; and, for this reason, it is necessary to consider the conditions that affect the workers and to treat them as men and not as machines.

My motto has ever been to give the same careful attention to the most humble worker in my charge, as to others of greater importance. I try to place myself in the worker's shoes and consider what I would want for working the "bad place" or dealing with the unfavorable conditions with which he is surrounded. I have always tried to make the compensation for labor equal to the requirements, and have found this method far superior to the pick-handle method of dealing with men, and which I had experienced, to my sorrow, when a boy.

One instance that I recall will illustrate what I mean by the "pick-handle" method. It occurred when I was 13 years of age. It was my duty to push empty mine cars, or "tubs," as we called them, around the shaft bottom. Each descending cage brought down two empty cars, and I and another boy of my age each took one of these cars to push around onto the other side of the shaft ready to be hauled into the mine.



It happened one day that my car jumped the track, and I said a naughty word, which the undermanager or pit boss overheard. Calling us both into his office, or "shanty," close by, and putting two boys in our place, he proceeded to ask who had been swearing. The result was that I was ordered to lower my pants, and, taking my head between his knees, he inflicted six hardy blows with a heavy belt. Then, saying the last did not count, he landed a seventh "for luck" on my little bottom.

Such was the treatment given a poor little 13-year old kid, who was to be taught a life's lesson. Little thought was given to the fact that I was the sole support of a family of seven, consisting of an invalid father, a good kind-hearted mother, and four brothers and sisters. My wage of 6s., about \$1.50 a week, or a shilling for a 10-hour day, together with about the same amount from the "Permanent Relief Fund," was the entire income on which we subsisted.

It was not my habit to swear, and the chance word that slipped my lips might better have been met with a gentle admonition. My punishment was highly enjoyed by the boss who administered it, two surveyors and my boy partner, all of whom stood by laughing heartily. To further humiliate me, a basket of good "eats" was uncovered and all, including my partner, partook while I looked on.

#### EFFECT OF AN EARLY LESSON

This trifling incident, however, has remained with me through life and taught me to consider the "under dog" always when handling men. The more ragged the coat, the keener has been my desire to find out why the coat was ragged. Seldom do the harsh words of a foreman reach the ears of the superintendent or operator. I believe few of the higher mine officials would thank their foreman for the use of harsh words. Harsh words spring from a selfish and brutish disposition that is characterized, in general, by incompetence on the part of men using them. In my opinion, one of the chief essentials in the handling of labor is the elimination of a foreman or boss who shows his incompetence by the harsh manner in which he treats the men in his charge.

An amusing incident that occurred recently in a boiler plant shows how a competent fireman taught an officious individual the lesson of minding his own business. A cap blew off the steam line above one of the boilers. Instantly, the fireman in charge rushed and shut off the valve that controlled the escaping steam. A helper in the employ of the company, conscious that his superiors were watching, quickly mounted to the top of the boiler with the cap, which he managed to place over the opening in the pipe but was unable to secure it in place. Observing this, the fireman, whose duty it was to repair the damage, opened the valve for a moment to the amusement of the observers, and closed it quickly, thereby again blowing the cap from the pipe. The incident caused no little excitement and amusement at the expense of the helper, whose chagrin showed that he had been taught the lesson needed.

In closing, let me say that the "mailed fist," or harsh words and curses of a foreman may accomplish the desired result at the time; but these are but the lance of incompetence that penetrates, at last, the vital spot in a successful operation. Such means destroy the spirit of coöperation among the workers. It must be remem-

bered that the most perfect mechanical equipment of a mine is handicapped or rendered useless, unless the mine officials in charge possess a drawing power that will invite the spirit of coöperation among their employees.

Berlin, Penn.

JOSEPH A. GREAVES.

*Leter No. 3*—The several letters that have been written, urging the necessity of mine discipline, together with the Foreword in *Coal Age*, Sept. 8, entitled "The Handling of Men," prompt me to offer a few thoughts on these two subjects, which are so closely related that the one suggests the other.

For the successful handling of men in the operation of a mine, discipline is an essential requirement, just as the "square deal" is an essential factor in the promotion of efficiency among mine workers. As stated in the Foreword, however, one of the most difficult things to acquire is the "ability to hand out a square deal." Let me suggest a few rules that are safe ones to follow in the handling of men.

First, create a respect among the men for your given word, by making few promises and strictly fulfilling those that are made.

Second, show your appreciation for honest effort by rewarding the faithful and efficient service of every workman in your charge. Be sure that the man will prove a better worker when his efforts are appreciated.

Third, let every man understand that advancement depends solely on his ability and faithfulness, which will be the determining factors when opportunity for promotion is offered. Make it plain that membership in fraternal, social or religious societies will have no weight in securing promotion.

#### VALUE OF COMPETITION IN MINE WORK

The remark made in the Foreword that "Mine foremen and superintendents should endeavor to encourage competition" reminds me of the old saying, "Competition is the life of trade," which I think aptly applies to the operation of a mine. Where there is no competition among the workmen and no effort is made to excel in the amount of work accomplished, both the output of the mine and the upkeep of the workings will suffer. I believe in friendly rivalry and competition, and think these should be encouraged with the understanding that the man who excels, in a given class of work, will stand the best chance for promotion in that line.

Speaking of discipline as being a necessity in the operation of a mine, let me say that when a rule is made it should be strictly enforced. No rule should be made, however, except one that is born of necessity. No favoritism should be shown, and every worker should be expected to obey the rules and comply with the laws.

I fully agreed with what G. E. Daugherty has said in speaking of discipline, *Coal Age*, Sept. 8, p. 423. After suggesting the giving of friendly advice to grumblers and sulkers, he says, "Sometimes, however, prompt dismissal is the only wise and proper course to be taken with one who is unwilling to coöperate."

My observation has been that the dismissal of a man for insubordination has a wholesome effect upon his fellow workmen. Such act shows all employees that the man in charge means business and impresses the fact that his orders must be respected and obeyed.

Briceville, Tenn.

U. S. WILSON.

## Inquiries of General Interest

### Estimating Fuel Consumption

We desire to estimate the probable fuel consumption required for a battery of ten boilers of 250 hp. each, to be operated continuously for the generation of 2500 hp. We are using a fair quality of Kentucky coal and desire to know how many tons of this coal will be required per day of 24 hours in the operation of such a plant.

MINE MANAGER.

—, Ky.

It is impossible to give an intelligent reply to this question without more definite information regarding the quality and heating value of the coal burned, the type of boilers used, method of firing and the kind of draft, whether natural or forced draft is to be employed.

Estimating roughly, it is customary, in the operation of the common type of cylindrical, return-tubular boilers, hand-fired and employing natural draft, to allow from 4 to 5 tons of coal per horsepower per hour, assuming a fair quality of coal burned and good firing. On this basis the weight of coal burned in 24 hours to produce 2500 hp. would be

$$24 (4\frac{1}{2} \times 2500) \div 2000 = 135 \text{ tons}$$

To be more accurate, however, the following is a brief outline of the method of estimating the amount of fuel required when the data just mentioned are at hand:

Assuming that the boilers are to be operated to their full rated capacity, these being horizontal, return-tubular boilers, and that hand-firing and natural draft are used, it is safe to estimate on an efficiency of 65 per cent. of the heating value of the coal. That is to say, 65 per cent. of the total heat units in the coal burned are to be found in the steam generated, per unit of time.

The heat of combustion of an average quality of Kentucky coal is given ("Mine Gases and Ventilation," p. 55) as 12,700 B.t.u. per lb. Then, taking the efficiency of the transfer of heat from the coal burned in the furnace to the steam generated in the boilers as 65 per cent., the heat available for the generation of steam is  $12,700 \times 0.65 = 8255$  B.t.u. per lb. of coal burned.

Again, the standard boiler horsepower, as adopted by the American Society of Mechanical Engineers, consists of 34.5 units of evaporation; or the evaporation of 34.5 lb. of water per hour, at a feed-water temperature of 212 deg. F., into steam at the same temperature. In other words, the generation of a single boiler-horsepower requires the evaporation of 34.5 lb. of water per hour, as we say, "from and at 212 deg. F."

Now, since the latent heat of steam, at this temperature, is 970.4 B.t.u. per lb., the weight of steam evaporated, from and at 212 deg. F., by the burning of 1 lb. of coal under the boilers is  $8255 \div 970.4 = 8.5$  lb.

But, the weight of steam required to generate 2500 hp. is  $34.5 \times 2500 = 86,250$  lb. per hour. Therefore, the weight of coal that must be burned to generate this weight of steam is  $86,250 \div 8.5 = 10,147$  lb. per hour. Finally, the total weight of coal burned in 24 hours, under the assumed conditions, will be  $10,147 \times 24 \div 2000 = 121.76$ , or say 125 tons.

### Rotary Dump at Shaft Bottom

A general manager who is starting a new shaft operation, and desires to use a rotary dump for unloading the mine cars at the bottom of the hoisting shaft, asked me recently, "How should the shaft bottom and the hoisting compartment be planned, in such a case, so as to take care of the dust arising from the coal in the process of dumping and avoid this being carried into the mine by the ventilating current?" It is assumed, of course, that the hoisting shaft is the downcast for the mine, as is the case when haulage is performed on the intake airway.

Knowing of another operator who is supervising the construction of a similar plant, I put the question to him. His reply was, "Practically the only thing we have determined along this line is the necessity of reducing to a minimum the velocity of the air passing over the rotary dump, which must be entirely closed off from the intake roads by concrete and doors, our plans for which have not been fully developed."

It seems to me that here is a question that is worthy of discussion: First, to determine the advantages to be gained by installing a rotary dump at the foot of the hoisting shaft; and, second, its proper design and construction so as to present the least interference with the ventilating and haulage requirements, assuming that the condition of the mine with respect to gas requires the haulage to be performed on the intake airway.

W. JAY KAY.

Uniontown, Penn.

The installation of a rotary dump at the bottom of the hoisting shaft is an idea that, we believe, originated in Illinois. The purpose of the plan is, evidently, to avoid hoisting any more dead load, in the shaft, than is absolutely necessary. But, since in a double hoist the empty car on the descending cage balances the loaded car on the ascending cage, the question of dead load is a matter of little importance in the saving of power.

The question of contaminating the intake air current with the dust arising from the coal in dumping is a serious one, especially in a gassy mine. It would be well to consider, moreover, the increased breakage of the coal by reason of being handled twice in dumping; also, the power required for the operation of the rotary dump at the shaft bottom. *Coal Age* will be glad to hear from those who have given this subject any thought or whose observations enable them to give valuable suggestions in regard to the feasibility of the plan.



## Examination Questions

### Indiana Firebosses' Examination, Held at Evansville, Sept. 27, 1917

#### (Selected Questions)

*Ques.*—(a) What effect, if any, does mixing carbon dioxide with firedamp have? (b) What effect, if any, does mixing carbon monoxide with firedamp have? (c) What effect, if any, does bituminous coal dust suspended in the mine air have on an explosion of firedamp?

*Ans.*—(a) The addition of carbon dioxide ( $\text{CO}_2$ ) to a firedamp mixture reduces its explosive condition. If the firedamp mixture is at its most explosive point, the addition of one-seventh of its volume of carbon dioxide will render it inexplorable.

b. The addition of carbon monoxide ( $\text{CO}$ ) to a firedamp mixture increases its explosibility or, in other words, widens the explosive range of the mixture, causing it to ignite more readily and extending its explosive limits.

c. The presence of fine bituminous coal dust suspended in the mine air has the effect to extend the flame of a firedamp explosion and increase the force of the explosion, by reason of the carbon monoxide distilled from the dust by the flame of the burning firedamp. The result is that an otherwise local explosion of gas may develop into a disastrous dust explosion extending more or less throughout the mine.

*Ques.*—Describe in full how you would proceed to make an examination of a mine as fireboss, beginning with your arrival at the mine, until the mine is taken in charge by the mine boss.

*Ans.*—On arriving at the mine, I would carefully examine, trim and light my safety lamp, having previously cleaned and filled the lamp before putting it away at the end of the last shift. I would then examine the ventilating fan and note that the usual quantity of air was passing up the upcast shaft. My observations proving satisfactory, I would proceed to enter the mine and make my way to the bottom of the downcast shaft or intake airway, or the mouth of the section of the mine that I was to examine.

From that point I would proceed to examine in order each working place, following the course of the air current. Each place should be examined carefully for gas that may have accumulated at the roof, the face of a pitch or in some cavity or other void place. At the same time, the roof of each place should be examined to detect any loose pieces and to ascertain what timbers should be set to make the place safe for work.

Having completed my rounds in the section of the mine in my charge, and having made note of the dangers discovered and barred the entrances to such places with proper danger signals, I would proceed to the bottom of the shaft or slope and enter a report of my examination in the book kept for that purpose, noting therein each danger found and its location and dating and sign-

ing the report. Having done this, I would notify the mine foreman of the results of the examination.

*Ques.*—Suppose there are 20 men working in rooms off the 3 and 4-E, off the main north and, in making the examination as fireboss in the morning, you found a large accumulation of gas in rooms 2, 3 and 4 off the 4-E, the same being the intake; how would you proceed to remove the gas and what precautions would you take to prevent an accident?

*Ans.*—Since the rooms in which the gas is discovered are the first rooms on the intake entry, there is every danger that the gas if disturbed will be carried in on the air current as it passes through the remaining rooms on the 4-E and returns through the rooms on the 3-E. For this reason, it is important not to disturb the gas until the men working in these rooms have been notified and withdrawn to a place of safety.

This being a large accumulation of gas, all the men should be removed from the mine before attempting to drive out the gas. In the meantime, all entrances to the affected zone and the return airway should be carefully guarded to prevent anyone from entering those places. Only experienced firebosses should be permitted to undertake the work of removing the gas.

All the men being withdrawn from the mine except those engaged in the work, the first step to be taken is to increase the quantity of air passing into the section where the gas is located. By means of special brattice where such is necessary, the air current should be made to sweep the place where the gas is accumulated. Only safety lamps of an approved type should be used and these should be guarded carefully so that they will not be exposed to a sudden rush of air and gas, in case a fall of roof takes place at the face. The work of driving out the gas must be conducted from the intake side and ample time given for the air to sweep away the gas. When the gas has been removed, the entire section of the mine must be carefully examined before again permitting men to enter for work.

*Ques.*—If there are 18,750 cu.ft. of air passing in an airway, the sectional area being 62.5 sq.ft., what is the velocity of the air current?

*Ans.*—The average velocity of the air current, in this case, is  $18,750 \div 62.5 = 300$  ft. per minute.

*Ques.*—If there are 8500 cu.ft. of marsh gas and air, at its maximum explosive point, passing in an airway, how much air must be added to render the mixture harmless? Demonstrate in figures.

*Ans.*—A mixture of marsh gas and air, at its most explosive point contains 9.46 per cent. of the gas. Hence the volume of gas present in this air current is  $8500 \times 0.0946 = 804 +$  cu.ft. per min. Then, assuming that the mixture will be harmless when this volume of gas is reduced to, say 2 per cent., by the addition of air, the volume after dilution must be  $804 \div 0.02 = 40,200$  cu.ft., and the volume of air added is, therefore,  $40,200 - 8500 = 31,700$  cu.ft. per min.

# Coal and Coke News

## For the Busy Reader

French coal mines are now putting out only about 20 per cent. less coal than before the war, notwithstanding that a considerable part of the coal field is occupied by the Germans.

Coal miners of Northumberland, England, have started a movement to make a gift to the nation by burning war-loan certificates, thus cancelling principal and interest as national liabilities.

Electric advertising signs may be prohibited by the Fuel Administration as a method of conserving coal, and New York's great white way hereafter will not be lighted until 8 o'clock instead of 4:30 or 5 o'clock as formerly.

Steel manufacturers were assured Tuesday by the Fuel Administrator that their requirements of byproduct coke and coal and gas coal will be met. It is probable that a modification of the recent priority order, so as to accept gas coal, will be made.

The Fuel Administration is making a survey of the country's manufactures and listing them with regard to their necessity to the nation's economic welfare during the war. They are graded from useless luxuries to absolute necessities. When coal is scarce it will be denied to manufacturers of unnecessary commodities.

During the last quarter of 1916 there were 37,563 women employed in the mines of Germany, as compared with 7265 employed in the same period of 1914. Youths employed in mines also show increases of 31,290 in 1914 and 43,095 in 1916. Wages paid show increases, but have not kept pace with the increased cost of living.

Reports of violations of the provisions of the food-control act have been classified at the Department of Justice and an active investigation of charges has been begun. This includes, of course, the provisions of the law with regard to fuel. The complaints which have been filed in that connection are greater in number than the allegations with regard to food violations.

Run-of-mine coal prices at the docks on Lake Michigan and Lake Superior were fixed on Oct. 28 by the Fuel Administrator. The prices range from \$6.20 to \$7 per ton with customary differentials for lump and screenings. This action was necessary as the docks were not included in the category of jobbers or of retailers. It is estimated at the Fuel Administration that this order will affect 2,292,000 tons of domestic coal.

The coal trade subscribed to over \$21,000,000 worth of Liberty Bonds. Among the largest subscribers were: Berwind-White Coal Mining Co., \$50,000; W. A. Marshall & Co., \$86,000; Blossburg Coal Co., \$2,000,000; Delaware, Lackawanna & Western R.R. Coal Department, \$3,500,000; Lehigh Valley Coal Sales Co., \$2,500,000; Burns Bros., \$210,000; Consolidated Coal Co., \$100,000; Olin J. Stephens, \$50,000; Dickson & Eddy, \$330,000; Clinchfield Coal Corporation, \$500,000; Elkins Coal and Coke Co., \$100,000; G. B. Markle Co., \$100,000; Lehigh & Wilkes-Barre Coal Co., \$4,238,300; Delaware & Hudson Co., \$1,500,000; Madeira, Hill & Co., \$150,000; New York, Susquehanna & Western Coal Co., \$700,000; Robert H. Burrows, \$100,000; Hillside Coal and Iron Co., \$300,000; Maryland Coal Co., \$60,000; Pennsylvania Coal Co., \$1,000,000; Mill Creek Coal Co., \$100,000; F. A. Potts Co., \$50,000; Pennsylvania Coal and Coke Corporation, \$200,000; Watkins Coal Co., \$60,000; Williams & Peters, \$500,000; Sterling Coal Co., \$25,000; Utah Fuel Co., \$100,000; Vinton Colliery Co., \$110,000; Stineman Coal and Coke Co., \$40,000; Pine Hill Coal Co., \$50,000; Thorne, Neale & Co., \$50,000; Wittenberg Coal Co., \$60,000; Lehigh Valley Coal Co., \$300,000; Eastner, Curran & Bullitt, \$225,000; and Meeker & Co., \$100,000.

## Harrisburg, Penn.

Advising men of their nationality to remain at work in and about the mines rather than join the active fighting forces being recruited among the Poles of this state, and expressing the belief that better service can thus be given to the nation, Stefan Hoffman and Rev. Stanley H. Sobienowski have issued an appeal to Polish men and boys of the hard-coal fields to remain at work in the mines. This action was taken upon the request of Mayor H. Kosek, who directed the attention of the organizers to the fact that an injustice was being done to the coal regions by the calling of Polish men to active service. The officials investigated the mayor's statement and found it to be accurate, with the result that further recruits for the American-Polish fighting forces will not be taken from the coal regions. A circular explaining this action has been issued.

From reports received here, the address of Dr. Garfield to the coal operators in Pittsburgh on Oct. 23 cast very little light on the Government's plans for meeting the crisis which seems nearing. Pleading with the 1500 coal operators to bring about measures to set aside differences, he reminded the coal men that the Government has unlimited powers when the country is at war. In the utterances of the National Fuel Administrator the operators saw a threat of Federal intervention into the mining situation if it gets beyond control of the operators and the labor-union officials.

J. D. Morrow, general secretary of the National Operators' Association, in addressing the operators said that it has been the custom of coal producers to waste each year more coal than Central Europe mined, and almost enough for the Central Powers to prosecute the war. This is because of inefficient mining methods. He said many of the men in the coal industry do not know what they are doing. Mr. Morrow said there was no fuel shortage. The consensus of opinion among the operators seems to be that "wildcat" strike agitators and whisky, augmented by poor transportation facilities, are responsible for the present coal famine in some sections.

Coal supplies in the Pittsburgh district have continued to decline in a discouraging manner, and the distress continues to increase. Manufacturing plants of all kinds are operating at reduced capacity or closed entirely for want of fuel, and in other cases operations are being maintained entirely on a hand-to-mouth basis. Inadequate railroad facilities and lack of labor is said to be responsible for the conditions. For the former, coal operators point out that the Government and the country are now paying for the oppressive railroad legislation of years, and the latter is due to the lack of immigration for three years, made worse by calling men to the colors after the mines had already been raided by munition-plant agents. In the bituminous region, about 72 mines closed down because of the \$2 price for coal.

A conference of miners and representatives of the Freeport, Thick Vein Operators' Association was held in Pittsburgh during the week at which another problem of the coal trade was considered, and an appeal was addressed to President Wilson, asking him to impose regulations on the price of explosives used in coal mining.

Investigations are now being made of the coal reserve in this section. The present condition was unforeseen by many of the railroads and other consumers, who accumulated stocks running into many thousands of tons. It is proposed to seize these for distribution, but the coal piles of the blast furnaces and the steel companies will not be disturbed, as they constitute a reserve against worse conditions in the winter months.

The Philadelphia Wholesale Coal Trade Association, composed of coal operators and jobbers in the soft-coal trade of this state, was definitely launched on Oct. 23.

At a meeting held at Philadelphia, officers were elected and the association took its place as a constituent part of the National Coal Jobbers' Association, whose headquarters are at Chicago. The purpose of the Association is to promote the welfare of the soft-coal trade in matters affecting the public. The officers elected were: President, Noah H. Swayne, 2nd, Swayne & Co.; vice-president, Harry K. Cortright, Cortright Coal Co.; treasurer, Edgar G. Carlisle, Blair, Parke Coal and Coke Co. The office of secretary is to be filled later.

## PENNSYLVANIA

### Anthracite

**Luzerne**—Eleven men were injured in an explosion in a coal chamber of the Black Diamond mine of the Haddock Coal Co., on Oct. 24. Eight men were seriously hurt and were taken to a hospital. It is thought that the cause of the accident was due to the low barometric pressure. During a storm the day of the explosion the pressure went down to 28.88 in., whereas the normal is 29.5. Nevertheless, the accident could not have happened, it is believed, had the rule of "safety lamps only" in this zone been observed. Some of the miners must have penetrated the chamber with naked lamps.

**Wilkes-Barre**—Officials of the Lehigh & Wilkes-Barre Coal Co. have requested the coal teamsters to refuse to take orders for, or deliver, more than two tons of coal at one time to any one person. Charles Huber, president of the company, stated that this ruling was made to protect the consumer from the glutton who fills his bins to their full capacity, thereby endangering the community to a shortage in the coal output. The dealers are expected to cooperate with the company as a patriotic duty.

**Plains**—Within the last several weeks more than a score of dwellings have been either totally destroyed or damaged so badly by mine caves that occupants have had to leave them and take up their residence elsewhere. The mine settlements cover a wide area and in different places the zigzag fissures resemble openings made by an earthquake.

**Scranton**—Scranton residents are up in arms over the report that a drift of coal is to be opened up under the 100 block of Bromley Ave., from which it is planned to take from 100,000 to 1,000,000 tons of coal. Chief Engineer W. F. Sekol, of the Delaware, Lackawanna & Western R.R. coal department is directing the operations. He has obtained an indefinite leave of absence from the company to conduct this private enterprise. The rights have been leased from several individuals.

**Reading**—G. Howard Bright, a hardware wholesale dealer, has been appointed fuel administrator of this city and county. He was designated by State Administrator Porter and will name his assistants at once.

**Hazleton**—The Lehigh Valley Coal Co. has completed the erection of a plant at its Hazleton shaft colliery for the mixing of silt with anthracite for use on engines of the Lehigh Valley R.R. This silt, which is a bituminous product, will enable the Lehigh Valley R.R. to save considerable hard coal and will greatly reduce the cost of firing. The company is also using automobile trucks for bringing damaged machinery from mines in the Lehigh and Schuylkill districts to the Drifton shops for repairs. Quicker service is secured by means of motorcars than through dependence on railroad trains.

**Morea**—In connection with the expiration of the lease held by the C. M. Dodson Coal Co. for operation of the workings here, on Dec. 31, next, it became known that this firm pays the highest royalty in the Lehigh region. At the Locust Mountain colliery, whose coal rights are owned by the Girard estate, the Dodsons must meet an outlay of \$3000 a day for rental alone. Royalties have gone up at all the mines where existing leases are running out, owing to the increased prices at which fuel is being sold. The royalties at the Locust Mountain mines is \$1 a ton on an average daily output of 300 tons. Big



veins were discovered at this place while a reservoir was being constructed several years ago at a point where no anthracite was thought to exist. The Girard estate, it is estimated, gets an average of 40c. a ton royalty from most of its holdings.

**Pottsville**—The Susquehanna Colliery Co., operating several coal mines in this section, has announced that it has subscribed \$200,000 to the second Liberty Loan on behalf of its workmen.

#### Bituminous

**Conifer**—The mine workers of Conifer have shown their patriotism to the United States by purchasing Liberty Bonds to the amount of \$15,550. The population of Conifer is made up of Austrians, Italians, Hungarians and Americans, nearly all of whom purchased bonds.

#### WEST VIRGINIA

**Charleston**—Members of the Kanawha Coal Operators' Association have subscribed \$3,000,000 to the second Liberty Loan bond issue, and have also aided their employees to take large amounts of the bonds by providing easy-payment plans.

**Chester**—The Follansbee Brothers big sheet and tin-plate plant at Follansbee, just below this city, suspended operations early last week because of its inability to secure a supply of coal. Appeals have been made to the Fuel Administration for relief. Approximately 2000 men were forced into idleness by the suspension.

Between 400 and 500 men are now being employed in the construction of a 15-mile extension of the New Cumberland branch of the Panhandle railroad from this point north on the Ohio River to Racoon, in Beaver County, Pennsylvania. Immense deposits of coal are to be developed upon the completion of the extension.

#### ALABAMA

**Birmingham**—The coal companies of Alabama did their bit in the Second Liberty Loan. The following were among the companies that responded: Tennessee Coal, Iron and Railroad Co., \$1,000,000; Sloss-Sheffield Steel and Iron Co., \$500,000; Alabama Fuel and Iron Co., \$25,000; Bessemer Coal, Iron and Land Co., \$5000; Eldorado Coal Co., \$1000. The subscription of the Tennessee Coal, Iron and Railroad Co. is the second large one made by that concern.

#### KENTUCKY

**Owensboro**—Elmer Mill, a local coal operator, has been directed by the Fuel Administrator to furnish 100 tons of coal to the Federal building in this city at the market price, plus a margin to be fixed later by the Government.

**Wayland**—The development of several cases of smallpox in the vicinity of Wayland and Garret has considerably interfered with mining activity. Physicians, however, are doing everything in their power to prevent a further spread of the disease.

**Seco**—The South East Coal Co. here subscribed \$15,000 to the Liberty Loan. The company's employees also made large purchases of bonds. It is said that the Consolidation Coal Co. led other companies in this field by subscribing \$112,800 for their employees.

**Winchester**—Mayor D. T. Matlack has asked for an opinion from the City Attorney as to his powers in the premises and proposes to confiscate coal passing through in order to insure residents of the city a sufficient supply.

#### INDIANA

**Seymour**—Mayor John A. Ross took three hundred orders for Indiana mine-run coal in a few hours after he had announced he would sell it for \$3.65 a ton, delivered. Orders were limited to one ton to a family with the prospects that the amount would be cut in half. Mayor Ross has advised all persons to burn wood if possible.

**Columbus**—Mayor H. K. Volland's coal trade slumped when it was learned that a local factory employee was selling coal to fellow employees at \$4.10 a ton, delivered. The mayor's coal sold at \$4.50.

#### ILLINOIS

**Lincoln**—Fire, breaking out the second time within a week in the mine of the Lincoln Coal and Mining Co. here, got beyond control and after firemen had fought it all night it was necessary to seal the mine, throwing 200 to 250 men out of work. The fire started in the fan-room, where flames were discovered a few days before, caused by a miner's lamp, which had been left burning close to the woodwork. Unless the flames are quickly extinguished by the cutting off of the air, the future of the mine will be uncertain. The last time there was a serious fire in

the mine it burned three weeks and the repairs required a year and the expenditure of \$30,000. As the mine has been operated 50 years and there is a long haul to the shaft, it is doubtful whether the company will feel justified in again making extensive repairs.

**Alton**—Prospecting has resulted in the discovery of a vein of coal on land owned by Robert Kennedy between East Alton and Bethalto. He will make further investigation, and if the vein is of sufficient thickness he will sink a shaft and acquire additional coal rights. The Kennedy property is within a mile of the Big Four R.R. A thick vein was formerly operated in that vicinity.

**Urbana**—Mines long abandoned by reason of the high sulphur content of their coal are likely to be reopened as a result of the present strong demand for pyrite, needed for the manufacture of sulphuric acid. Pyrite, according to a pamphlet issued by the Illinois Geological Survey, is found in Illinois bituminous coal to the extent of 1 to 6 per cent. It is now worth three or four times as much as the coal itself.

#### MISSOURI

**St. Louis**—Coal has been struck on a seven-acre tract on Portis Ave., owned by Julius Gutgesel, in the southwestern section of the city. Indications of the presence of coal was noticed by two miners, at whose suggestion Gutgesel prospected and struck a 4-ft. vein a short distance below the surface. He will sink a shaft and take the two miners in with him if it is found that a mine can be operated profitably.

**Harrisonville**—A drill operated by the Drexel Oil Co. on oil-land leases near Drexel, in the southern part of Cass County, has entered a 10-ft. vein of coal at a depth of 530 ft. The coal is found, under test, to be of similar quality to that of southeastern Kansas fields. Officials of the oil company say it will be developed. The company has 3500 acres under lease.

**Jefferson City**—John W. Scott, deposed Commissioner of the Permanent Seat of Government, under indictment on the charge of disposing of state coal to state officials, has returned here and intimates that he will make a statement implicating others in his transactions.

It is becoming a problem to get fuel for the capitol and other state buildings. There is a probability that manufacturing concerns will have to close down. Wood is being largely used for household fuel purposes.

#### WASHINGTON

**Everett**—The school board has arranged to put its school heating plants, which have been operating as oil burners, back to a coal-burning basis.

**Renton**—A fire in the coal bunkers of the Pacific Coast Coal Co., recently destroyed the bunkers and several hundred tons of coal, causing a loss of about \$15,000.

### Foreign News

**Nanaimo, B. C.**—The Jinglepot coal mine has been sealed up as a result of a fire which broke out early in October. About 200 men have been laid off, and the mine is not expected to be opened for three months.

**Cairo, Egypt**—Egypt produces no coal and her coal imports have fallen off more than 50 per cent. since the war. The fuel question threatens to become serious. To economize street lighting has been decreased 25 per cent., all shops are closed at 7 p.m., all restaurants at ten and all places of amusement at eleven.

### Personals

**John P. White**, of Des Moines, Iowa, has resigned as president of the United Mine Workers of America and will give all his time to the National Fuel Administration.

**Maj. E. S. Helburn**, former mayor and a prominent coal operator, has again been nominated for mayor in the Middlesboro, Ky., city primary. He was without opposition.

**P. L. Grove**, of Wilmington, Del., superintendent of the Delaware R.R., has been appointed as head of the Delaware Coal Advisory Board by Coal Director Charles H. TenWeeges.

**F. H. Shephard**, who was chief inspector of mines in British Columbia in 1911 and recently Federal member of the fuel board from Nanaimo, B. C., has accepted the office of inspector of dredging for British Columbia.

**A. E. Yetter**, of Nanticoke, Penn., for a number of years superintendent of the Susquehanna Coal Co., with headquarters at Wilkes-Barre, has accepted a position as mining engineer with the Delaware & Hudson Co.

**Hugh Archbald**, mining engineer, of Scranton, Penn., and at one time on the editorial staff of "Coal Age," is now a captain in the Engineering Corps of the United States Army. He was for a time an instructor at Fort Niagara.

**Frank J. Hayes**, vice president of the United Mine Workers, was chosen by the international executive board of the union to succeed Mr. White. **John L. Lewis**, international statistician of the United Mine Workers of America, will be appointed vice president.

**E. E. Squier**, vice president of the E. E. Squier Co., has been appointed a captain in the ordnance department of the United States Army. He expects to take up duties soon at Washington. During his absence the business will be in charge of Secretary R. H. Squier.

**William G. Weltzel**, of Frankfort, Ky., has retired from the retail coal business in favor of the Frankfort Elevator Coal Co. In a card issued to his customers he stated that he took the step "owing to the improved coal situation as to Government regulations of handling coal."

**Thomas Mark** has resigned as superintendent of the Elk Lick mine, near Salisbury, Penn., for the receiver of the Merchants Coal Co., to accept the superintendency of the Patterson mine of the United Coal Corporation, near Elizabeth, Penn., succeeding Joseph Kennedy, resigned.

**Frank B. Snyder**, of Jerome, Penn., general outside foreman of the Jerome mines of the United Coal Corporation, has been appointed superintendent of the Elk Lick mine for the receiver of the Merchants Coal Co., to succeed Thomas Mark, resigned, as noted elsewhere in these columns.

**R. H. Buchanan**, mining engineer of the Delaware & Hudson Co., has been appointed general superintendent of the Luzerne division, comprising all collieries between Greenwood and Plymouth inclusive. They are: The Greenwood, Langcliffe, Ladin, Delaware, Pine Ridge, Baltimore and Plymouth.

**John C. Higgins**, chairman of the King County, Washington, fuel committee, has named the following committee to investigate fuel conditions, gather data on fuel supply and demand and make recommendations as to price control and distribution of the supply: **John C. Lewis**, **C. Bacon**, **H. C. Ross** and **John L. Hall**.

**O. O. Calderhead**, state rate expert of the Public Service Commission, has been assigned to the staff of David Whitcomb, State of Washington fuel administrator, for 30 days, during which time he will organize and direct a traffic bureau operated exclusively to supply cars and obtain delivery of coal in the State of Washington.

**R. Y. Williams**, at present superintendent of transportation, Delaware & Hudson Co., has been made general superintendent of the Lackawanna division, which comprises all collieries between Forest City and Glen Ridge inclusive. Mr. Williams will have charge of the following collieries: The Clinton, Coalbrook, Powderly, Jermyn, Gravity Slope, Olyphant, Eddy Creek, Marvine, Leggett's Creek, Von Storch and the Manville.

### Obituary

**C. E. Williams**, at one time superintendent of the Hampton electric plant of the Delaware, Lackawanna & Western R.R., Coal Department, was recently killed while making an exhibition flight in Mobile, Ala.

### Publications Received

"Monthly Statement of Coal-Mine Fatalities in the United States, June, 1917," compiled by Albert H. Fay, Department of the Interior, Bureau of Mines. Unillustrated, 27 pp., 5 1/2 x 9 in.

**"Monthly Statement of Coal-Mine Fatalities in the United States, May, 1917."** Compiled by Albert H. Fay, Department of the Interior, Bureau of Mines. Unillustrated, 26 pp., 5 1/2 x 9 in.

**"Production of Explosives in the United States During the Calendar Year 1916."** Compiled by Albert H. Fay, Department of the Interior, Bureau of Mines. Technical Paper 175. Unillustrated, 24 pp., 5 1/2 x 9 in.

**"Shape Book."** Carnegie Steel Co., Pittsburgh, Penn. Bound in limp leather, with gilt tops. Illustrated, 352 pp., 5x7 1/2 in.

This is the sixth edition of the "Shape Book" of the Carnegie Steel Co., and as compared with the fifth edition, issued only two years ago, the 227 pages devoted to profiles of sections has increased to 265 pages. Noteworthy increases in the number of sections rolled are to be found in the portions of the book devoted to Shipbuilding Bulb Angles, Sash and Casement sections, Automobile sections and Cross Ties. The book may be obtained at any of the Carnegie Steel Co.'s district offices for \$1.

## Trade Catalogs

**Link-Belt Rope Tramway System,** Watson Type. Link-Belt Co., Chicago, Ill. Book No. 343. Pp. 8; 6 x 9 in.; illustrated.

**Electric Mine Hoists,** The Wellman-Seaver-Morgan Co., Cleveland, Ohio. Bulletin No. 5. Pp. 12; 8 1/2 x 11 in.; illustrated.

**Specifications of Type B Erie Shovel,** Ball Engine Co., Erie, Penn. Pamphlet. Pp. 12; 8 1/2 x 11 in.; illustrated. This also gives special features of design and details of construction.

**Let 85 Per Cent. Magnesite Defend Your Steam,** Magnesite Association of America, 702 Bulletin Building, Philadelphia, Penn. Pamphlet. Pp. 40; 6 x 9 in.; illustrated. This is a treatise on the subject of heat insulation and deals with the use of 85 per cent. magnesite in different insulation systems.

## Industrial News

**Frankfort, Ky.**—The Chamber of Commerce of Bowling Green, Ky., has filed a complaint with the State Railroad Commission against the increased rate on coal to that city from western Kentucky mines.

**Portland, Ore.**—Commissioner Kellaheer, of the department of finance, is investigating a coal deposit near Chehalis, Wash., with a view to purchasing it for this city, which would operate it as a municipal enterprise.

**Cleveland, Ohio.**—The Wellman-Seaver-Morgan Co. has established an office at Seattle, Wash., to take care of its customers in that territory. The office is in charge of Glenville A. Collins, and is located at 1317-18 L. C. Smith Building.

**Springfield, Ill.**—The Tuxhorn Coal Co. has been sued by Lucius Riggs, an inspector of cars for the C. I. & W. R.R., for \$20,000 for injuries received when a car on which he was standing was bumped by two coal cars sent down an incline by employees of the Tuxhorn company.

**Philadelphia, Penn.**—The Board of Directors of the Pennsylvania R.R. at a recent meeting announced several changes in the purchasing department of the company, among which was the appointment of B. P. Philippi as an assistant purchasing agent. Mr. Philippi will have charge of the purchases of fuel coal for the company.

**St. Louis, Mo.**—Small coal dealers, at a meeting at 2228 Olive St., appointed a committee of three to try to make arrangements with operators and jobbers to supply their needs. It was the sentiment of the meeting that if satisfactory arrangements are not made a cooperative organization will be formed and a contract made for the entire output of a mine.

**Covington, Ky.**—A committee composed of two representatives of the Chattanooga interests and two of the Louisville interests, with Judge A. M. J. Cochran, of the United States Court, Eastern District of Kentucky, will operate and administer the affairs of the Federal Coal Co. until such time as the United States Court of Appeals passes on questions at issue in litigation.

**Columbus, Ohio.**—City Attorney Scarlett believes it might be legally permissible for the City of Columbus to use part of its

funds in handling coal in the way of selling to the public. He quotes from a decision of the Massachusetts Supreme Court which held that a municipality may deal in coal or other commodity when famine is threatened and the city only can supply the need.

**Washington, D. C.**—The Davis-Bournonville Co., of Jersey City, has recently opened a Government sales office in the Colorado Building with Henry R. Swartley, Jr., as resident manager. The company manufactures oxyacetylene welding and cutting apparatus and oxygen and hydrogen producing apparatus, which is being used extensively by both army and navy.

**Homestead, Penn.**—The Carnegie Steel Co., realizing that there will be a shortage of natural gas for manufacturing purposes this coming winter, has installed coal-dust fuel machinery at 24 of its 64 openhearth furnaces here and for 8 of its 15 openhearth furnaces at Clairton. This will result in a saving of 15,000,000 cu. ft. of gas daily at Homestead and 6,000,000 cu. ft. at Clairton.

**Catasauqua, Penn.**—The Ironton R.R. has notified the Public Service Commission that it would suspend passenger service beginning Nov. 1 because of a scarcity of coal and high wages. The road is controlled by the Thomas Iron Co., operating in the cement region. Its length is 13 miles and its passenger service is small, although it pays substantial dividends on the general investment.

**Cincinnati, Ohio.**—Nearly every coal company represented in Cincinnati contributed substantially to the second Liberty Loan, subscriptions in large amount being common. Similar action on the part of all other business men in the city resulted in the maximum quota of \$35,000,000 allotted to Cincinnati being largely exceeded, the total being estimated at nearly \$45,000,000.

**Columbus, Ohio.**—Developments in the fuel control arrangements in Ohio during the past week have shown that the shortage of coal is due to lack of transportation facilities. Approximately 25,000 loaded cars of coal were discovered on Ohio sidings and terminals which the railroad companies are unable to move. Of these loaded cars 13,000 were for the Lake and 12,000 for domestic users and utilities.

**New York, N. Y.**—On Oct. 1, 1917, the New York sales office of the Edison Storage Battery Co., long located at 206 W. 76th St., moved into larger quarters, at 209 W. 76th St., right across the street from the old headquarters. At the new location many additional facilities have been installed to enable the manager, John Kelly, to take care of the increased business and to give every customer the usual Edison service.

**Middlesboro, Ky.**—President Milton H. Smith and other officials of the Louisville & Nashville R.R. have recently made an inspection of the line from Corbin to Gary, Ky., the new mining town of the United States Coal Co. The company, in the extreme eastern end of Harlan County, proposes to produce 400 cars of coal daily and the Louisville & Nashville, it is thought, in order to take care of this extra traffic, will double track from Harlan to Corbin.

**Richmond, Ky.**—Willoughby & Son have filed a claim with the Kentucky Railroad Commission against the Cumberland R.R. for a car lot of coal at \$4.50 a ton. In their complaint they assert that they are not mine operators and that the railroad company cannot confiscate their coal at the Government price at the mines. Unless satisfactory adjustment is made, the claimants assert, they will bring suit to collect the retail price from the railroad company.

**Chicago, Ill.**—The first annual convention of the National Coal Jobbers' Association was held in this city on Oct. 24 and 25. The following officers were elected for the coming year. E. M. Platt, of Chicago, president; Whalton S. Alden, of New York City, vice president, and L. Romanski, of Chicago, secretary and treasurer. The convention went on record as indorsing and fully supporting the Federal Government and the Fuel Administration in their efforts to regulate the coal business.

**Louisville, Ky.**—The Conservation Association of Kentucky, the organization of the field men of the fire insurance companies, is making progress in its inspection of the coal-mining properties of the state, examining with a view to making recommendations to prevent fires. David Caldwell, of Louisville, chairman of the execu-

tive committee of the association, stated that in the main conditions so far had been found to be excellent—almost uniformly so where the company commissary stores are concerned.

**Jersey City, N. J.**—The Davis-Bournonville Co. has taken over the plant and factory of the Davis Acetylene Co. at Elkhart, Ind. The latter company has been dissolved, and the plant will be operated from Jersey City. The Canadian factory at Niagara Falls, Ontario, occupied by the two companies, has also been taken over. The Davis-Bournonville Co. has also purchased the H. G. Kotten Co. factory and grounds opposite its Jersey City property. A four-story warehouse, 60 x 100 ft., will be erected on the Kotten property.

**Louisville, Ky.**—An injunction has been entered in the Jefferson circuit court here requiring the Harlan Gas Coal Co. to fulfill its contract with the Harlan Coal Co. until Apr. 1, next, or until further orders of the court. This order is in the suit of the last-named company to compel the former to observe a contract for delivery of all of its product. It became effective on execution by the plaintiff of a \$20,000 bond. A motion of the defendant company to transfer the action to Harlan County on the ground that the courts here are without jurisdiction was overruled.

**Cincinnati, Ohio.**—Rains in the upper Ohio River Valley early last week enabled the movement of the most considerable tows of coal which have come down the river for some time, ten boats bringing nearly 150 barges, with a total of about 75,000 tons of coal, to Cincinnati. Additional shipments are said to be on the way and will help somewhat in relieving the city's dire need of fuel for industrial and domestic use. The rise in the river made unnecessary the further employment of artificial "waves" created by manipulation of Government dams on the river.

**Toledo, Ohio.**—Because of railroad congestion and the fact that a large tonnage has been diverted from the Lakes to private users, loadings at the Toledo docks during the week ending Oct. 26 were not as large as in former weeks. The Hocking Valley docks loaded 134,000 tons as compared with 156,000 tons the previous week. The total handled by these docks since the opening of navigation is 4,000,236 tons. The Toledo & Ohio Central docks handled 62,000 tons as compared with 96,000 tons the previous week. The total handled by these docks during the season is 1,940,426 tons.

**Cincinnati, Ohio.**—Control of 15,000 acres of coal land in Bell and Knox Counties, Kentucky, is involved in a suit heard the past week in the United States District Court of Covington, Ky., by Judge A. M. Cochran. The suit resulted from the action of bondholders of the Continental Coal Co., of Wyoming, which became bankrupt and whose assets were sold for \$1,400,000, covering the lands in question. Stockholders in Louisville and Chattanooga sought control of the land and the appointment of a receiver, and the court appointed John Stites, of Louisville, Ky., to take charge. No order regarding final disposition of the properties has been made, however, as the court suggested that an agreement be reached between the two conflicting groups of stockholders. Nearly a score of mines are operated on the lands involved, whose value is fixed at about \$3,000,000.

**New York, N. Y.**—Albert H. Wiggins, New York State Fuel Administrator, has announced the following additional appointments of County Fuel Administrators: Bronx County—C. C. Miller, formerly President of the Borough of the Bronx and also a member of the Mayor's Food Committee. Queens County—George J. Ryan, President of the Chamber of Commerce of the Borough of Queens, a former President of the Long Island City Business Men's Association and is a member of the local advisory board of the Corn Exchange Bank. Nassau County—Anton G. Hodenpyl, of Locust Valley, with an office at No. 14 Wall St., New York City. Mr. Hodenpyl is a member of the banking firm of Hodenpyl & Co. Suffolk County—E. Eugene Hawkins, of Patchogue. Mr. Hawkins is president of the Patchogue Electric Light Co. and a director of the Citizens Bank of Patchogue. Reeve Schley, Fuel Administrator for New York County, has had several conferences with local coalmen during the week and is of the opinion that New York will suffer but little from the lack of supplies. He says there is no cause for hoarding and no excuse for alarm. Mr. Wiggins has made a survey of the situation in the state and will make a report to the National Fuel Administrator, Dr. Garfield.



# Market Department

## GENERAL REVIEW

Nowhere does the coal supply equal the demand. Transportation the big obstacle. Increase of 45 cents on bituminous coal as yet barren of result. Many consumers still operate on a hand-to-mouth basis.

**Anthracite**—The receipts of anthracite in New England for the month of October have been disappointing. The commandeering of tonnage by the Government has somewhat decreased the available capacity of water transportation and bad weather has held up coastwise shipping for days at a time at various loading points with the result that most of the coal reaching New England territory has had to travel all-rail. The result has been that receipts have been smaller than might be desired. In New York and its environs retail yards are practically without supplies while dealers are receiving urgent requests for deliveries. Efforts are being made to relieve the situation and it is believed that increased shipments may shortly result. In most localities it is the belief that anthracite prices and coal prices in general, for that matter, have reached the lowest level they will attain during the coming winter. Economy in the use of anthracite and combustibles in general is urged almost everywhere. Some consumers and dealers object to the apparent careless preparation of various anthracite grades, while others complain of the differential allowed to the individual producers as compared to the large companies. It is notable, however, that practically the only dealers that now have any stocks worth mentioning are those that obtained their supplies from individual producers and paid the individual differential. It is thought that some rulings of the coal administration will be had upon these points before very long.

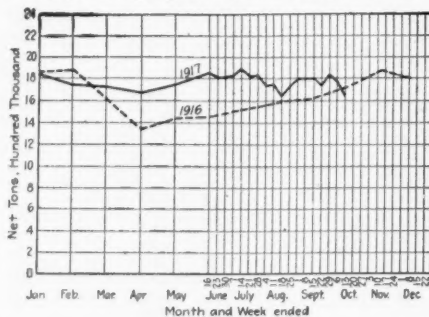
**Bituminous**—The present bituminous coal situation is the cause of grave alarm throughout the entire country. There is apparently no question but what the mines already operating and employing present labor forces could produce an abundance of coal to meet the needs of the nation. Transportation facilities however, which in past years have at various times on the individual railroads proved inadequate to meet the demand, are now proving inadequate to meet them under the press of greatly increased necessity and the advantage of the pooling arrangement. Past Governmental and political railroad repression is now bearing its legitimate fruit and the nation as a whole is and will be the ultimate sufferer. It was doubtless hoped that a revision of prices upward by the Federal authorities would result in an easing of the coal stringency. Thus far, however, the increase of 45 cents per ton has been barren at least of direct results. Outside of the Pittsburgh district apparently no spot coal is to be had. Manufacturers and other industrial consumers are daily imploring the coal producers to ship them coal and offering as an incentive prices far above those fixed by the Government. Such offers cannot of course be accepted. The one day suspension of the priority order for Lake shipping went far toward temporarily relieving the stringency of fuel in the central manufacturing district of the country. It is quite possible that the close of navigation on the Great Lakes will have a similar and more permanent effect. This, however, will probably not take place for a month or six weeks yet, as it will probably be thought wise to make the close as late this year as possible.

**Lake Trade**—The rapidity of movement of Lake coal is apparently only decreasing in proportion to the inability of the railroads to get the coal to the loading points. There is now little question but what the needs of the Northwest will be amply taken care of the coming winter. Thus receipts of bituminous coal at Milwaukee are considerably greater now than for the season of last year. Some of the interior points tributary to Lake ports on the other hand still complain of a shortage of fuel and it is feared that in some of the smaller towns an actual coal famine may soon exist.

**A Year Ago**—Wave of hysterical buying forces anthracite to new high levels. Violent price advances in bituminous. Car supply situation dominates the market. Market for middle western grades expanding in all directions.

## COAL PRODUCTION

Strikes in Illinois were responsible for a loss of nearly 900,000 tons of soft coal last week. The total output, including lignite and coal coked, is estimated at 9,880,801 net tons, a loss of 8.2 per cent. as compared with the previous week. The average daily production—shown for the



present year by the solid line—amounted to 1,646,800 net tons, 76,000 tons less than the daily production during October, 1916. Indeed the mark reached by the daily average was the lowest since the week of Aug. 18, when the mid-August strikes in central Illinois were at their height. Anthracite shipments decreased slightly—from 42,824 cars during the week ended Oct. 13, to 42,590 cars in the week of Oct. 20.

## CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS WEEK ENDED:

	Sept. 29	Oct. 6	Oct. 13	Oct. 20
Bituminous shipments, 114 roads	192,260	186,752	188,863*	173,531†
Anthracite shipments, 9 roads	42,361	42,362	42,824*	42,590†
Beehive coke shipments, 4 roads	14,283	13,561	14,111*	12,810†

\* Revised from last report. † Preliminary, subject to revision.

## BUSINESS OPINIONS

**The Iron Age**—Events continue to show that the War Industries Board is taking a minor position in price fixing. A list of extras to apply to bars, shapes and plates has been announced through a subcommittee of the American Iron and Steel Institute, and the general committee of the institute and its subcommittee chairmen are now in session in New York to settle finally the price question on products not yet fixed. It is doubtful if a conclusion will be reached at the one conference, but the situation now points to a clearing in a matter of days of the atmosphere of uncertainty.

**Dun**—Temporary suspension of activities through semi-holiday observances, and some interruption by storms, have not obscured the fact that the movement toward increased business has continued. With comparatively few conspicuous exceptions, the trend has been steadily forward with the advancing season, and in some important branches, such as in hides, leather and footwear, the improvement has been noteworthy.

**Bradstreets**—Notwithstanding some manifestations of conservatism born of a disposition on the part of the ultimate consumer to economize, and the attention accorded the Liberty Loan, trade movements proceed at a pretty lively rate, and the activity of industry is unabated. Concededly, the big propelling influence is Governmental orders, which extend out to a myriad of lines, and because of the operation of the priority rule which decrees that the Government must be served first, the result is that stocks of essential merchandise are short, a fact that large civilian interests only appreciate when about to lay down orders.

**The American Wool and Cotton Reporter**—General buying of a consistent character was the feature of trading in wools last week. All combing wool commanded much attention and showed indications of short

supply. Scoured wools sold freely in all grades, a great deal of inquiry developing for South Americans for carding purposes.

**Marshall Field & Co.**—Current wholesale shipments of dry goods for the week are largely ahead of the heavy volume of the same period last year. Road sales for immediate delivery are in excess of the same week in 1916, while road sales for future delivery are about equal to those of a year ago. Merchants have been in the market in about the same numbers. Collections are heavier than a year ago.

## Atlantic Seaboard

### BOSTON

Market overwhelmed by disturbing influences. Most New England steam users extremely anxious over the outlook. Recent revision of prices upward seems thus far to bear no result in this territory. Almost an entire absence of spot coal in any direction. October receipts of anthracite disappointing. Railroad retrenchment since 1907 one of the real underlying causes.

**Bituminous**—Now that many of the May to August "spot" purchases have been filled, a large number of New England consumers are figuring how long present stocks will last. There is so wide a variation among plants that it would be difficult to write a general statement that would cover even the larger number of cases, but it is probably a fact that if buyers in this section are not permitted between now and Dec. 1 to 15 to arrange for supplies above and beyond what they are likely to receive on contracts of date prior to Aug. 23, there will be some tall cases of shut-down and much serious interruption to the commerce dependent upon the output of these factories. Practically all the industries, excepting possibly a few public utilities, are prosperous and have no disposition to quibble over paying an adequate price to the mine operator, a price that will permit the latter, costs considered, to produce coal on a margin sufficient to give him the same kind of inducement that manufacturers are receiving on the goods they produce. Instead, the consumer and the operator have both been cut off from the spot market for a period rapidly nearing three months, and still there is no working program; at least no "working program" that works.

The foregoing is only a brief review of the fuel situation in New England at this writing. The present condition is not the result of the efforts to control the coal industry solely, so much as it is the fruit of long-accumulating causes which those efforts have not been able to overcome. The railroads are staggering under enormous traffic thrown upon them from all quarters, and no plan of regulation encourages any hope of relief that does not thoroughly take into account the present distress of transportation facilities. The point is that these difficulties ought not needlessly to be augmented. The normal and usual channels ought to be more closely followed, and systems of distribution that have been worked out in years of close competition ought not now to be disrupted without good and weighty reason.

While, for instance, there are small sailing vessels lying idle at New York and there are ample dock facilities to load them cheaply, why send coal cars the long haul all-rail to Tidewater points that can be far better served by boats? One of the large anthracite distributing roads has had its normal rail service to New England seriously curtailed for weeks past because of the numbers of cars that have not been returned from far Eastern points.

At Hampton Roads there is practically no improvement. The railroads are not able to bring the coal down as fast as required, and berth room is insufficient for prompt dumping when it arrives. The tonnage situation is as difficult as ever, and now that new rules are in force as to ship demurrage, rates have been scaled upward on a current market basis regardless of charter terms, and bottoms are subject to withdrawal any day on Government requisition, contractors here are kept in constant worry over supply and costs.

And private corporations are not by any means the only interests affected. The pub-

lie service companies as large consumers are most vitally concerned. In framing their contracts early in the season they felt they had provided for every possible contingency, but now elements have been introduced that could not have been foreseen. Apparently there is no longer any surplus of Pocahontas or New River even in the hands of dealers who have forwarding facilities. So many things can happen that no rehandler cares to imperil the supply for his regular contractor, and as a result the last door open for moderate purchases of spot coal has been effectually closed. An occasional offering of water-borne coal by some contractor with a temporary surplus is now about the only avenue open to the current buyer.

Neither has there been any spot offering from central Pennsylvania worth reporting. The Fuel Administration's grant of a 45c. increase per net ton has thus far shown no result that is considered at all significant for New England. It was so manifestly offset by the advance tendered to the mine workers that operators say they are hardly in better position than on the \$2 net-ton basis. The preference being given coke shipments is another highly important factor.

An interesting sidelight on the current situation in the Cambria and Clearfield districts is the rumored offering this week of small tonnages on the new basis, provided the purchasers will furnish cars. In other words, the operators in question have all the orders, on the pre-Aug. 21 basis, they can get equipment for; they will sell now only to get additional car supply.

Other than this there are no prices to report, in any direction, so far as "spot" bituminous is concerned. Quotations are not mentioned any more in polite trade circles. "Give us coal" is the cry.

A week ago there was a note of optimism, a distinct feeling that prices would be placed on a basis that would meet with general approval. The revision of Oct. 29 was therefore all the more disappointing. It is still early, however, to gage its effect upon November output.

It is announced that the New England representative of the Fuel Administration has been given authority to take coal from those who have more and give thereof to those who have less. This opens up another line of interesting possibilities, of which we shall doubtless have developments during the next week or two.

Representatives of many industries of New England are still urging the Fuel Administration to do something to relieve the shortage. Priority of shipments for this territory is one of the obvious moves that can be made. It remains to be seen whether Dr. Garfield will feel that the situation warrants such an order.

**Anthracite**—The mild weather is having its usual influence on retail trade. Demand is light, notwithstanding the public has been kept fully advised of the general shortage. Doubtless the volume of coal in cellars is larger than in any recent year, and that the current demand will continue to be of the hand-to-mouth order.

On the other hand October has been most disappointing as to receipts. Tows have been delayed for a week at a time on account of weather and this has affected loading at both Philadelphia and New York. None of the larger shippers has loaded over 50,000 tons for New England since Oct. 1.

Conferences are being held by local fuel committees with dealers, but so far as we are advised, no price reduction has so far been put into effect. The matter of handling costs is being gone into more or less thoroughly but in most cases there is the usual difficulty over understanding the details of the business.

New rules governing demurrage went into effect on Philadelphia & Reading barges, Nov. 1. On cargo capacity of 1500 tons or less but 2 days are now allowed for discharging, 2 1/2 days for barges over 1500 tons but not over 2500 tons, and 3 days for barges carrying over 2500 tons. The demurrage is uniform at 7c. per ton per day and all premiums are abolished. This will still further increase the cost of coal to the consumer.

#### NEW YORK

Efforts being made to relieve the local situation and increased shipments may result. Retail yards are practically without supplies while dealers are being rushed with complaints and urgent requests for deliveries. Middlehouses refuse orders for individual product. Bituminous operators anxious to hear from Washington regarding the new prices. Spot coal not to be had while demand continues heavy.

**Anthracite**—Federal and state authorities and the local coalmen are working together to relieve the local situation which has become alarming because of the lack of supplies. Conferences have been held between

the dealers and the representatives of the Federal authorities including the fuel administrators and it is said that steps are under way by which more coal will be sent here.

Retail dealers have about as little coal on hand as at any previous time in the history of the trade with the exception of the strike periods, and they are being rushed with new orders and requests for deliveries. As yet they have many unfilled orders some of which were received several months ago.

The large operators do not seem to be sending to this market anything like its full quota, but are making heavy shipments to other sections. Some heavy handlers of individual product have been instructed not to take any new orders for 10 days or two weeks. In the meantime New York City consumers are going without their required amount of fuel although as yet the weather has not been such as to require heavy consumption.

The situation is more serious with the householder than with the industrial plant. The dealers are keeping the latter supplied with sufficient coal to enable them to continue operations.

Efforts of the city departments to secure bids for furnishing a comparatively small tonnage, consisting of about 40 items, last week, for immediate use, were not successful. Some bids were received but the prices were said to be high and no awards resulted. For barley coal the average price was said to be around \$5.

The wholesale situation is quiet. The large producers are taking care of their regular customers in a haphazard way giving them just about enough coal to keep their yards in operation, but the middleman without direct mine connections or a strong contract is having serious times.

There is no abatement in the demand for the various sizes. Chestnut is as scarce as either egg or stove while pea coal is hard to find.

Of the steam sizes barley is the easiest. Buckwheat No. 1 is scarce with a heavy call.

Current quotations, per gross tons, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$5.95	\$6.70
Egg.....	5.85	6.60
Stove.....	6.10	6.85
Chestnut.....	6.20	6.95
Pea.....	4.70	5.45
Buck.....	3.95@4.65	5.50@5.75
Rice.....	3.40@3.60	5.00@5.25
Barley.....	2.90@3.15	4.00@4.25
Boiler.....	3.15@3.40	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

**Bituminous**—The order issued last Saturday adding 45c. to the prices fixed by the President's order of Aug. 21 to all grades, caused much conjecture in the local market as to whether it applied to coal produced in central Pennsylvania and Maryland. The order did not specifically mention these coals and for that reason some operators hesitated before adding the increase to the price of their product. On the other hand there were many who believed these coals were included in the increase.

Whether an increase of 45c. per ton will have any effect on the local situation is problematical. There is no coal to be picked up here, demand continues heavy and contract coal to industries is not moving as freely as it should. Even with the increased prices producers would be called upon to take care of contracts before sending any coal into the open market.

The railroads continue to take what supplies they want much to the detriment of other consumers, it being claimed that along one road fully 20 per cent. of the coal mined is being confiscated.

Local operators are interested in the New England situation and the order issued to Fuel Commissioner Starrow of Boston authorizing him to purchase coal at the prices fixed by the President to supply pressing necessities.

Consumers with contracts are fairly well supplied with stocks but their consumption is so heavy because of increased hours of labor that they must keep on replenishing their stocks by going into the open market. Some near-by plants have less than 24 hours' supply on hand.

The car supply on both the Pennsylvania and the B. & O. continues to be from 35 to 50 per cent. Labor is dissatisfied because of the lack of work and operators complain because workers are continually leaving. The jobbing situation shows no improvement and with business continuing dull it is said that some houses are about to reduce their help.

#### PHILADELPHIA

**Anthracite retailers dissatisfied.** Prices now thought at lowest level for winter. State commission fears shortage. Economy in use urged. New rulings on prices and weights. Dealers fight individual differential. Complaints of preparation. Bituminous price increase unsatisfactory. Car supply poor. Consumers urge administration to increase car supply. Jobbers in bad plight. Smithing coal at \$4.25 to \$5.75.

**Anthracite**—The retail dealers have gone through another trying week and some of the representative dealers are thoroughly disgusted with their business and would be glad to dispose of their interests. Requests for information from the Federal Fuel Administration are becoming so frequent that the dealers are complaining about the additional clerical work being forced on them.

The local fuel committee in a published statement late in the week announced that consumers could not expect further reductions in retail prices, for the reason that the present rates were felt to be equitable and that no dealer was receiving undue profits.

The state fuel administrator affirms that this city is facing a serious shortage and that his committee considers the price of fuel as of minor importance and the people are not to receive cheaper fuel on any recommendation of the committee. He states that unless consumers bar all such luxuries as greenhouses, grate fires and other unnecessary fuel consumption, the city is in grave danger of going cold.

Recent complaints that buyers did not believe they were receiving full weight has led the local commission to issue a statement that the legal ton in this state consists of 2240 lb. and that buyers of a fractional part of a ton should see that their bills are so marked. Thus the weight of a half ton given in pounds should be 1120 lb. and not 1000 lb. It is also reported that the commission will order those dealers who were unable to adjust their retail prices on Oct. 1 in accordance with the Government order to make refund of any difference between the prices charged and the figures arrived at according to the ruling of the National Fuel Administrator. It is not thought that such refunds will in any event amount to more than \$25,000 for the entire city.

There have been bitter and general complaints entered against the ruling allowing individual operators to charge 75c. above the companies' prices, and 95c. when shipment is made through brokers. A number of offers have been made to dealers to supply them with pea coal until Apr. 1 at \$4.15 at mines. These offers are made in the form of a contract and some of them have been accepted and signed. The idea seems to be that should the Government reduce the independents' price to that of the big companies all contracts would be allowed to stand. However, there are many who, while they believe the margin between company and independent coal may be cut in the near future, do not think that the margin will be wiped out entirely.

The steam-coal market is gaining strength, as is shown particularly in No. 1 buckwheat. There is a ready market for \$4 coal and sales have been made as high as \$4.25. Rice, too, is active and sales at from \$3 to \$3.25 are not unusual. Barley is strong on the Pennsylvania R.R. tracks at from \$2 to \$2.25, while on the P. & R. Ry. it is being sold around \$1.80. Some shippers consider 55c. for culm a fair price, and by the looks of some of it arriving here, even that is too much. On the other hand, some concerns who have made a specialty of this fuel are easily getting \$1 and claim that they could not afford to load it for less.

Complaints continue to come in about the percentage of pea in nut coal and so on throughout the sizes. There is also much complaint of dirt and more than the ordinary percentage of impurities. In fairness to all this evil should be remedied at the breaker, as chestnut coal adulterated with as much as 40 per cent. of pea is coming to this market. There seems to be some likelihood that the fuel administration will take up this problem later.

The prices per gross ton, f.o.b. cars at the mines for line shipment and f.o.b. Port Richmond for Tide, are as follows:

Line	Tide	Line	Tide
Broken.....	\$4.55 \$5.70	Buck.....	\$2.90 3.50
Egg.....	4.45 5.75	Rice.....	2.40 3.40
Stove.....	4.70 6.00	Boiler.....	2.20 3.30
Nut.....	4.80 6.05	Barley.....	1.90 2.15
Pea.....	3.40 4.30		

**Bituminous**—The long expected change in the Government price was finally allowed, but the 45c. increase was far from satisfac-



tory to the operators. The operators still maintain that their request of a \$3 minimum was based on facts and is no more than just. At this time it is impossible to tell whether the increased price has had any effect in augmenting production, but this is doubted.

Not for several months has coal been in shorter supply than recently. Quite a number of plants have been running on the closest of margins, barely avoiding shut-downs, while others have not even been that fortunate. Consumers continue to ask for coal at any price, seemingly ignoring the fact that no reputable shipper would transact business at other than the Government price of \$2.45. The car supply continues inadequate and no shipper is receiving anywhere near the quota required. One central Pennsylvania mine with a rating of 125 cars has received not quite 25 cars for commercial loading in a period of six days. This concern claims it is costing \$2.50 to produce a ton of coal when working full time, but even at that it alleges it could make ends meet with the contract business still held if cars were received.

Telegrams from the Fuel Administration to shippers urging shipments to various customers who have complained direct to Washington, become more common each week. On the other side, too, many customers when told that the reason that shipments are delayed is because of lack of a proper car supply, are taking upon themselves the duty of informing Washington of this condition and asking that increased allotments be given to their shippers.

While all branches of the trade are suffering from present conditions, those firms who have heretofore done an exclusively jobbing business are now particularly affected, and most of them are practically idle. Recently this branch of trade feeling that it might be entirely eliminated organized itself into an association with the idea of defending its position before Commissioner Garfield.

With the bars down on smithing coal there has been an increasing trade developed at a market price between \$4.25 and \$5.75 at mines. These prices are per net ton, as against the gross ton formerly used in Pennsylvania. It now seems that with all business being transacted on the basis of the net ton that unit has come to stay.

#### BALTIMORE

Trade here still in unsettled state, with coal scarce and demand heavy. Price questions remain in the air. Transportation bad.

**Bituminous**—As far as this section is concerned the trade generally looks upon official Washington as still running around more or less in circles in an effort to settle fuel problems. Stories come from the capital of plans to prosecute coal profiteers, but this is of small interest here as there is little selling of soft coal, simply because the trade cannot get anything like enough to deliver even on urgent contracts, and hard-coal men are selling on the schedule for October, which was approved by Washington pending the appointment of a coal administrator and committee to fix distribution profit margins. No administrator has been named and the coal trade sells what little fuel it can get at October rates.

Demand grows greater day by day, and supply grows shorter under a wretched car movement. The central West Virginia operators wired a protest to Washington saying that the car supply for the first half of October was the worst in three years, and that mines cannot be run even half time.

After the operators meeting in Chicago and the jobbers gathering in the same city, the coal forces descended on Washington. There this week they are trying to find out the status of the wholesaler, the retailer and the jobber, get fair profit margins and work out some solution for the national situation. Meanwhile the trade here wonders why no administrator has been named for this district.

**Anthracite**—Supplies have run so low on hard coal of all kinds and the demand is so heavy that practically all the coal men have established waiting lists. Even old customers are getting but part of their coal, and new ones are frequently told that their orders will be accepted provisionally and that a ton or so may be allowed them in the next two or three weeks. This promise seems contingent upon an improvement in the delivery situation by railroads. It is estimated that hundreds of homes and institutions are still without coal of any kind in their cellars and that probably half the buildings in the city are without the usual amount of fuel they hold at this season of the year. It is a fortunate consumer indeed who has his entire winter supply of coal in his bins.

#### HAMPTON ROADS

Fairly good stocks. Poor dispatch on account of congestion. Shipments practically confined to contract business. New rules at piers governing docking of vessels.

With stocks at the several piers in good shape dispatch is nevertheless bad, particularly at Sewalls Point and Newport News. At Lamberts Point vessels are loaded much quicker than at the two other terminals. Few sales are reported, most of the shipments being on contract business. Exports are fair, but no figures are available for publication.

The problem in Hampton Roads at present is the congestion at all of the piers and it is reported that steamers requiring bunkers will have to be coaled at anchor, thus leaving more berths at the piers for cargo vessels. This rule has not yet been put in effect. The railways have amended their pier rules, however, so that bunker steamers will no longer have preference in docking but must take their turn with cargo vessels.

Under the exceptional conditions now existing shippers are not expected to raise any objection to this change. If steamers are required to take their bunker supplies from barges while at anchor it will be a different proposition altogether. There is not sufficient anchorage room in the inner harbor for any number of steamers and their coal lighters and at Hampton Roads it is not practicable to coal from barges in the winter time on account of unfavorable weather conditions. As this regulation, if enforced, will cause serious delays it is expected that the Shipping Board will have something further to say in the matter, in spite of the report that they have approved the plan.

The army, as well as the navy, is now taking a large tonnage of coal, these deliveries of course having the preference both as to coal and berthing space. To expedite the movement of coal to New England vessels engaged in this trade are now allowed to pass through the nets at any time, day or night. This is a great help and will do away with much delay to steamers and barges.

The proposal of the Shipping Board to put the handling of all tows in the New England coal trade under the direction of Capt. A. L. Crowley does not yet seem to be in effect. It is a good plan and if properly handled will cause considerable saving in time. The main idea is that a tug would not wait for any barge or barges to make up a tow, but would take the barges available. The present practice is to wait until the barges brought south are loaded, often causing a delay of several days to the tug.

The demand for coal at the Panama Canal is still so large that the Panama Railroad Co. continues to charter tonnage to meet the demand. These boats are in addition to the steamers owned by the Government and engaged in this trade exclusively.

The recent advance of 45c. per net ton at the mines allowed by the Government is most acceptable. This will make the price for Pocahontas and New River run-of-mine \$4.41@4.58 at Hampton Roads.

Dumplings week ending	Gross Tons		
	Oct. 13	Oct. 20	Oct. 27
Norfolk & Western....	107,886	124,692	134,749
Virginian.....	80,071	85,677	72,933
Chesapeake & Ohio....	65,311	97,814	77,487
Total.....	253,268	308,183	285,169

#### COASTWISE FREIGHTS

Two dollars and fifty cents is now the rate prescribed by the U. S. Shipping Board on steamers of 2500 tons D. W. capacity, and over, Hampton Roads to Boston, with 15c. more for Portland. This rate cancels all prior charters, the ships now being operated by the Government on a 90 day basis, and on a prescribed rate per ton per month (\$6.25) on Government form of Charter Party.

The current rate on barges, 2000 tons or less, is \$3.1 day to load and 2 days to discharge, 7c. per ton per day demurrage, Hampton Roads to Boston.

For New York loading, barges are in good supply. As low as \$1 has been accepted for New Bedford, but the market is nearer \$1.15.

### Lake Markets

#### PITTSBURGH

No market change observable from 45c. advance. Supplies slightly better. Suspension of Lake priority order helps.

No change in the general situation is observed thus far as a result of the ad-

vance in coal prices which became effective at 7 a.m. Monday of this week. Sellers and buyers have been indisposed to take hold any more vigorously than formerly, but the common view is that there will eventually be a somewhat heavier market movement, in proportion to production, and hopes are entertained that the proposed fine system, requiring the miners to perform a specific amount of work per week, will result in some increase in production. Naturally operators express disappointment that the advance in the coal price is only 45c. Forecasts had ranged from 35c. to more than \$1.

The supply of free coal loosened up a trifle more last week and some large consumers reported that they were able, by dint of effort, to pick up practically as much coal as they needed for current operations, but they had used all their stock piles and saw no chance of building up any stocks. Several consumers have found that they can pick up coal much more readily by dealing through brokers than by dealing direct.

The 24-hour suspension of the Lake shipment priority order, effective Sunday midnight to Monday midnight, resulted in heavy shipments to the line trade during the period, particularly to Ohio points and it is thought that many consumers will find themselves better supplied with coal for a short time. It is thought there may be one or two additional suspensions of this order before the close of Lake navigation.

We quote the market at the 45c. advance: Slack, \$2.20@2.35; mine-run, \$2.45@2.60; screened, \$2.70@2.85, per net ton at mine, Pittsburgh district, the lower price being on direct sales, the higher on sales made by jobbers.

#### BUFFALO

New bituminous prices, but their effect yet unknown. Much complaint of shortage. Anthracite moving fast, but scarce locally.

**Bituminous**—The situation is not changed as yet, as it is too early to mark the effect of the new prices. It was expected that the advance would be at least 50c. and some looked for more, even \$1, but the Government idea seems to have been that any large advance would merely change over coal from contracts to the open market, which would not increase the output.

The bituminous prices formerly quoted, but which were not of much effect, were as follows, per net ton, f.o.b. Buffalo:

	Slack	Lump
Pittsburgh.....	\$3.30	\$3.80
Bessemer.....	3.25	3.75
Allegheny Valley.....	3.15	3.65

To these prices should now be added 45c. After much delay and effort the dealers in smithing and cannel coal have ventured to ask \$4 to \$4.75 for them, no objection being raised by the Government. Smokeless goes at the price of lump.

**Anthracite**—The situation is not materially changed. Complaints of shortage come from all directions, but are met by reports from shippers that every consumer will lay in two years' supply if he can get it. Many instances are known of city and other cellars containing two winters' supply, while there are other consumers complaining that their orders, given last spring, are not yet filled. The fact that there seems to be coal enough to go around has provoked certain shippers and others to threaten a house-to-house inspection.

The Lake movement does not fall off and another month of the rush ought to lay down enough anthracite in the Northwest to more than meet the needs of a heavy winter. If the coming winter is light the supply next May will be large everywhere, though it will likely be common to conceal it, as it is now.

Shipments by Lake for the week, not including Canadian ports, were 128,209 net tons, of which 74,900 tons cleared for Duluth and Superior, 26,200 tons for Milwaukee, 22,600 tons for Chicago, 3000 tons for Racine and 1500 tons for Houghton.

#### DETROIT

Steam-coal supply is still limited. Retail dealers arrange tentative prices for domestic stock. Lake shipments diminish.

**Bituminous**—Except for shipments of coal sold under contract, there is little bituminous stock arriving in Detroit, according to jobbers. They assert that diligent efforts to locate coal which can be brought to Detroit for use of their customers, are almost invariably unsuccessful; that there is no coal to be had at the mines, in most instances, and that when a small amount is found, the transportation conditions are such that the task of getting delivery is attended by much uncertainty. Embargoes

on roads south of Toledo continue at frequent intervals and complaints concerning scarcity of cars are numerous. Local consumers of steam coal, with few exceptions, have only a small supply on hand and in some cases are said to be practically without fuel.

Household consumers of domestic coal have been fortunate in having weather conditions such that suffering was not caused by lack of fuel, even though, at times, the lack of it was attended by some discomfort. A small amount of fuel has been delivered in all homes from which an emergency call was received and where investigation proved the family was without coal. It is hoped that improvement is in sight.

**Anthracite**—The anthracite supply is not being increased to any appreciable degree, while the small stocks in yards of retailers have been reduced through deliveries under direction of the municipal coal dictator. At a conference, Oct. 27, between a number of retailers and a representative of the Federal coal administration a tentative arrangement was made to place the retail price of stove and egg at \$9.75 and of chestnut at \$10 a ton, which is about \$1.25 higher than the fall schedule of seasons preceding 1916. These prices are subject to approval by W. K. Prudden, state coal administrator.

**Lake Trade**—There has been a gradual decline in volume of Lake shipments for several weeks past, due to slow movement of coal to the loading docks. Cargoes last week were fewer than the number of boats available for moving them. A rate of 75c a ton was made on shipments to a slow unloading dock on Lake Superior. This is a 25c advance over the carrying charge to other docks, where better dispatch is given the boats.

#### COLUMBUS

The Ohio coal trade is still up in the air and efforts of the Federal fuel administration to bring order out of chaos has not met with success. There are grave fears of a serious fuel famine.

The coal trade continues in a muddled condition in Ohio and coalmen generally can see no end of the difficulties. Domestic demand is much more insistent than was the case a week ago and so far efforts to partially relieve the stress have not proven very efficacious. On the whole the belief prevails that there will be some suffering from want of fuel during the coming winter and it is only a question of keeping this suffering to a minimum. Prospects are for a short supply of coal in all sections, due to the inability of railroads to move the coal.

Domestic demand is strong in every section of the state and some dealers have engaged the services of mayors and other city officials to secure them a supply if possible. Dealers are generally following the policy of only delivering one ton to a family in order to make the available supply go as far as possible. The local committees named by the state fuel administrator are busy tabulating information in their districts and it is expected that some concerted action may be taken soon.

The steam business is active and all classes of manufacturing plants as well as public institutions and utilities are in the market for supplies of fuel. Railroad demands are also stronger than ever and there has been considerable confiscation. Many schools are without a sufficient supply and the same is true of power plants and other large users.

Pocahontas is scarce and prices continue high. There is also a good demand for West Virginia splints. Anthracite is selling around \$10.

New prices on short tons f.o.b. mines are as follows:

	Hock- ing	Pom- eroy	Eastern Ohio
Rescreened lump.....	\$2.70	\$3.05	.....
Inch and a quarter.....	2.70	3.05	\$2.70
Three-quarter inch.....	2.70	3.05	2.70
Nut.....	2.70	3.05	2.70
Egg.....	2.70	3.05	.....
Mine run.....	2.45	2.70	2.45
Nut, pea and slack.....	2.20	2.45	2.20
Coarse slack.....	2.20	2.45	2.20

#### CINCINNATI

Receipts of coal have been somewhat better, but still continue much below the immediate demand. Distribution in small lots in order to relieve distress has been made.

Somewhat more moderate weather prevailed during the past week, thus avoiding the actual suffering which would otherwise have been the case. The demand for fuel of all grades continues to outstrip the supply, however, and while receipts have shown some improvement, they are entirely inadequate to meet the orders already in the

hands of the trade. Rains raised the Ohio River to a level where coal shipments have been made feasible without the use of the dams, and some considerable consignments have been received; while rail coal, temporarily diverted from the North to meet immediate requirements in this vicinity, has also helped to enable dealers to give their customers some coal.

The relief thus afforded is only of the most temporary nature, however, and the trade and all of the authorities, city, state and national, are working in every possible way to stimulate production and to regulate distribution in such a manner as to make the supply go as far as possible. During the past week, also, with the absence of immediate distress, some complaint has been made of the retail prices charged, on the ground that they exceed the figures fixed by the Government. No action is as yet probable, however, the principal question still being to get the coal, regardless of any other consideration.

#### LOUISVILLE

**Kentucky output sold up for weeks ahead and operators apportioning shipments on basis of past purchases of established customers. Retail market bare and panicky.**

With the output of the Kentucky mines sold ahead for fully two months, distribution interfered with by Government orders and the prospects of the production reaching normal poor, the coal operators are generally undertaking to apportion their shipments on the basis of the volume of business done with established customers prior to development of abnormal conditions. They consider this the best possible means of proceeding in these troublous times, when they not only feel that the Fuel Administration is pursuing a mistaken policy, but find it difficult to determine just what the Government does want.

Production in the southeastern Kentucky-Tennessee section, where the strike was recently settled, is still much below capacity, due principally to a shortage of workers. All parts of the state report shortages, especially on domestic supplies. One Louisville retailer sent a representative to all important mining centers in the state, but was unable to place an order for coal for early shipment. The market is flooded with buyers and buying orders but no coal is for sale.

Retailers generally are doling out coal to consumers, as it is received, and in Louisville most of the retailers, with or without mine connections, have no coal to sell. Deliveries more than eight or ten blocks from retail yards are practically refused. The recommendation from the Fuel Administration headquarters that householders conserve coal appears to have made everybody want lots of it and at once.

Louisville is practically a western Kentucky market, at this time. When conditions return to normal one effect will be to improve the demand for this coal, heretofore not a big nor a ready seller in this city.

#### BIRMINGHAM

**General demand for coal shows decided strength, and much difficulty is being experienced by consumers in securing fuel. Public utilities and industrial plants conspicuous in the scramble. Production showing slight, but gradual improvement. Car supply fair the past week.**

Appeals for coal are pouring upon brokers and operators from every direction. Public utility companies and industrial plants—some with their anticipated requirements contracted for—are in the market for fuel to augment the incomplete quotas they are receiving on contract. New Orleans and Mobile territory is hard pressed for coal, and also numerous inquiries have been received from Chattanooga and its environs. There is really little surplus of coal available, which condition is being relieved as much as possible by holding down contract stipulations as near the minimum as practical. The shortage is beginning to pinch and cause serious concern.

Operators in the Cahaba and Black Creek fields are hoping for some relief in the way of an increase in the price of coal at the mines, at the hands of Administrator Garfield, to whom they submitted cost data some time since in support of their claim that the present Government schedule did not admit of a fair margin of profit above cost. A decision is anticipated in the near future. Birmingham brokers and operators, so far as can be ascertained, are adhering strictly to the Government prices on all business accepted. Retailers have worked out their individual schedules, and practically every yard has placed its business on a strictly cash basis. Stocks on the yards are very light, and the work of replenishing is slow and difficult.

Some improvement in the working schedules of the miners is noted, and, if continued, this will materially better the coal supply. Labor conditions, aside from the shortage feature, are satisfactory. The deficit in miners and laborers is being relieved slightly by the return of negroes from the North.

## Coke

#### CONNELLVILLE

**Market settled to steady gait and production remains unsatisfactory.**

The coke situation seems now to have settled down to a steady gait, but of course an unsatisfactory one. The improvement that was expected to follow the price fixing of Sept. 24, through the completion of short term contracts made before that time, has probably been experienced as far as it is to occur at all, and the supplies now offered in the market are hardly likely to increase farther, except as production may increase, and for this there is no great hope.

No results are traceable to the coke car priority order promulgated a trifle over three weeks ago. There is still complaint of car shortage but it is claimed that increased car supplies would result in no more than a small increase in production, as the region is getting nearly all the work out of the labor available that could be gotten even with a full car supply.

The merchant blast furnaces are with few exceptions operating fairly well, being almost fully supplied with coke, but many of the steel interests are carrying a few furnaces banked almost all the time, now one stack and now another, and there are several idle furnaces that would be blown in if a supply of coke were assured.

We quote the market unchanged at \$6 per net ton at ovens. There is still no word from Washington as to a differential for foundry coke, the transactions in which are quite limited.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Oct. 20 at 346,239 tons, an increase of 7237 tons. Shipments are not reported for the week.

**Buffalo**—The price remains nominally as before, \$6 at the ovens, plus \$1.85 freight to this city, but it is not acknowledged by any shipper that he has been able to sell stock at that price. The report always is that the contracts take all of the output and there is none for the open trade. Heavy receipts of iron ore by Lake are continued, being 377,541 gross tons for the week. Unless the fleet is sent for wheat the movement of ore will go on till it freezes in the pockets.

**Birmingham**—The Birmingham coke market is experiencing strong inquiry, but the amount of business being accepted is very limited, due to the product not being available. Several foundry coke producers are practically out of the market, having a car or two now and then to offer the spot trade. Prices remain unchanged. Production is gradually assuming normal proportions.

## Middle Western

#### GENERAL REVIEW

**Many uncertain elements exist in the Mid-West coal trade. Shortage very acute in most sections. Striking miners have returned to work.**

The coal trade of the Mid-West is in a most uncertain condition at this writing. The effects of the strike in the Illinois-Indiana fields is now being keenly felt, and while the mines are at present in operation, the suspension of operations for a period of one week, or 10 days in some cases, accounted for an output loss aggregating approximately 2,000,000 tons. The shortage of supplies in most of the Mid-West territory immediately affected by the strikes, so serious before the mines suspended operations, has not been vastly improved during the days that have passed since operations were resumed.

The car supply continues to play a prominent and more or less uncertain part in the situation. The general inactivity of the mines in the regions affected by the strikes permitted an accumulation of cars at the mines, but the full working time that this made possible did not extend, in most cases, more than three or four days, so that while production, in most sections of Indiana and Illinois was good early in the week, the supply of empties did not hold out until its close.

There continues to be much unrest among the members of United Mine Workers, and



operators in close touch with the situation are much concerned relative to future production, especially in the districts where there has been more or less trouble in keeping the men at work.

In the central Illinois field most of the striking mine employees were at work Monday of this week, but in Franklin County, where the latest trouble started, only a few of the mines were producing coal Monday and Tuesday, about half of the county's mines were working Wednesday, and Friday was the first day that all mines in the county were producing. None of these mines had their full quota of men at work, and this condition will, no doubt, exist until such time as the new scale of wages becomes effective. The loss in production in Franklin County due to the strike amounts to approximately 300,000 tons. This is a considerable loss, especially in view of the fact that this is the banner coal county of the state.

In the Indiana field conditions have improved, the men who were on strike in the territory adjacent to Terre Haute have returned to work, and due to a fairly good car supply shipments have been heavier than for some time. The Indiana fuel administrator, Evans Woolen, is receiving daily reports of the tonnage hoisted and shipped, and is assisted in securing this data by the Knox County Coal Operators Association, Indianapolis, and the Indiana Coal Trade Bureau, Terre Haute. Efforts are being made to give relief first to the towns where actual famine of coal exists. These efforts have already been successful in a number of instances.

Country dealers throughout the Mid-West are still clamoring for anthracite and other smokeless coals. Some of them claim their inability to satisfy all domestic coal users of the impossibility of receiving adequate supplies of these fuels, and hesitancy on the part of some householders who are equipped with the hard coal burners to begin the use of bituminous coal.

#### CHICAGO

**Situation in Chicago is extremely critical. Supply of coal is inadequate to furnish all demands. Shortage at city plants.**

Notwithstanding the fact that reports issued by the Fuel Administrator show that Chicago dealers have received more cars of coal during the present season than were received for the same period last year, dealers continue to insist that there is danger of a serious shortage, and that their stocks of the cheaper grades are almost depleted, and receipts of anthracite and smokeless coal have been so few and far between that it is impossible to supply all the demands and in most instances contract business is all that is being cared for.

A delegation of Chicago's aldermen have gone to Washington to confer with Dr. Garfield relative to securing additional supplies of fuel for the gas company and city pumping stations—the statement having been made that the health of the city is menaced. They did not, however, make known what efforts had been made to buy coal in Chicago before leaving for Washington.

The 45c. per ton increase in price as announced Oct. 27, from Washington, will not be sufficient for all Illinois operators, especially those operating in the thin vein field of northern Illinois, and will no doubt prove a disappointment to those who expected the increase would closely approximate 75c. per ton advance over present prices.

The new scale of prices effective Oct. 29, 1917, in the Chicago market are as follows per net ton f.o.b. cars at mines:

	Williamson and Franklin	Saline and Harrisburg
Steam lump.....	\$2.65@2.80	\$2.65@2.80
Domestic lump.....	2.65@2.80	2.65@2.80
Egg or furnace.....	2.65@2.80	2.65@2.80
Small egg or nut.....	2.65@2.80	2.65@2.80
Stove.....	2.65@2.80	2.65@2.80
Chestnut.....	2.65@2.80	2.65@2.80
Pea.....	2.65@2.80	2.65@2.80
Washed egg.....	2.65@2.80	2.65@2.80
Washed stove.....	2.65@2.80	2.65@2.80
Washed nut.....	2.65@2.80	2.65@2.80
Mine-run.....	2.40@2.55	2.40@2.55
Screenings.....	2.15@2.30	2.15@2.30
Washed slack.....	2.15@2.30	2.15@2.30

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky
Dom. lump.....	\$2.65@2.80	\$2.65@2.80	\$3.10@3.25
Steam lump.....	2.65@2.80	2.65@2.80	3.10@3.25
Egg.....	2.65@2.80	2.65@2.80	3.10@3.25
Small egg or nut.....	2.65@2.80	2.65@2.80	3.10@3.25
Mine-run.....	2.40@2.55	2.40@2.55	2.85@3.00
Screenings.....	2.15@2.30	2.15@2.30	2.60@2.75

#### MILWAUKEE

**Minor change in prices due to Government regulation. A marked gain in receipts.**

Government regulation of coal prices is being felt in Milwaukee to the extent that dealers have been freely circularized by Dr. H. A. Garfield's forces at Washington and warned under penalty that profits must not exceed the fixed price at the mines, the freight and an increase of 30 per cent. over the margin of profit of 1915. The resultant prices show minor changes, but whether the schedule has been used by the Government cannot be ascertained.

There has been no change as to steam coal. Anthracite stove size now sells at \$9.35, an advance of 10c., egg at \$9.10, nut at \$9.45, a drop of a nickel, and buckwheat at \$7.55, an advance of 5c. Pocahontas screened is now \$9.75 and mine-run \$8.50. Hocking sells at \$8.25, an advance of 25c. Consumers pay an additional 50c. when coal is carried into bins.

There has been a marked improvement in the receipts of coal by Lake within the past week. Hard coal now shows a gain of 97,018 tons over last year up to and including Oct. 29, while the shortage in receipts of soft coal has been reduced to 558,743 for the same period. Thus far this year 738,601 tons of hard coal have been received, against 641,583 tons in 1916, and 2,567,838 tons of soft coal against 3,126,581 tons last year.

#### ST. LOUIS

**Milder weather eases a most critical situation. Steam and domestic off of the market and many localities are without coal. Practically a full car supply on all roads. Storage supplies being rapidly depleted. No Eastern shipments.**

The only thing that has prevented St. Louis from enduring severe suffering among the poor is the fact that the weather has been unusually mild. Even at that, reports from other communities would indicate that St. Louis is in better shape than other large cities of the country, in regard to both steam and domestic grades.

The most astonishing thing about the local situation is that nearly every mine in the field at the present time is receiving from 80 to 100 per cent. car supply. The B. & O. and the Vandalla are the only two roads that seem to be suffering to any extent at all.

Offsetting this, there is a shortage of men at nearly all mines, and reliable data from many operations show that the tonnage produced per man is smaller now than at any time in the past 10 or 15 years.

Many mines, however, are on short time in southern Illinois on account of no water at many places, as there have been no heavy rains for many months. In the Williamson and Franklin County field mines are obliged to shut down that are buying electric power from the southern Illinois Public Utility plants on account of the power station not having sufficient water to run full time.

It is understood that any factories making Government supplies that run short of fuel can now secure it by notifying the Quartermaster's Department which, in turn, instructs certain mines to take care of these plants. It is evident that many of these plants have been accustomed to using coal from other districts but are now buying from the Williamson and Franklin County field.

With the near approach of cold weather, the situation here is becoming extremely critical. The country districts are going to fare badly for they have no coal at all and have no prospects of getting any.

The situation in some small cities is extremely critical and many schools will

have to close entirely unless coal is secured in the next couple of weeks.

There is no coal from Arkansas coming in and no West Virginia smokeless. A small tonnage of anthracite moved in the past week, perhaps 15 or 20 cars, all told. This coal is practically off of the market in St. Louis, and none at all is going to the territory outside.

The railroads in the past two weeks have confiscated much coal belonging to dealers who have not been notified of the confiscation, and who are still expecting their shipments. This too will add to the confusion when colder weather arrives.

The retail prices in St. Louis at the present time are: Williamson and Franklin County, \$5 to \$5.25; Mt. Olive, \$4.50 to \$4.75; Standard, \$4.25.

During the past week about 300 small retailers in St. Louis who have no yards held a meeting to protest to the Federal authorities against the yard dealers refusing to sell them coal. They have appointed a committee to handle this, also if necessary to either lease or purchase a mine from which to secure a supply. They are getting no coal at all from the yard dealers, who, in turn, are unable to get enough coal to take care of their wants.

The wholesale circular price here is as follows, per net ton f.o.b. mine:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump.....	\$2.35	\$2.35	\$2.35
3x6-in. egg.....	2.35	2.35	2.35
2x3-in. nut.....	2.35	2.35	2.35
No. 2 nut.....	2.35	.....	.....
No. 3 nut.....	2.35	.....	.....
No. 4 nut.....	2.35	.....	.....
No. 5 nut.....	1.85	.....	.....
2-in. scrags.....	1.85	1.85	1.85
2-in. lump.....	.....	2.35	2.35
3-in. lump.....	.....	2.35	2.35
Steam egg.....	2.35	2.35	2.35
Mine run.....	2.10	2.10	2.10
Washed:			
No. 1.....	2.35	2.35	.....
No. 2.....	2.35	2.35	.....
No. 3.....	2.35	2.35	.....
No. 4.....	2.35	2.35	.....
No. 5.....	1.85	1.85	.....

Williamson and Franklin County rate is 87½c. Other fields, 72½c.

#### SEATTLE

**Coal dealers and operators say prices will not go down. Government figures less than in August, but little likelihood of further decreases.**

Based on the mass of figures, statements, orders and supplementary orders issued by the coal administrator at Washington, D. C., for the control of prices of coal to the consumer, coal dealers in Seattle and mine operators in the state have decided that the situation today is covered by the following:

(1) On the allowance of \$4.50 a ton at the mine for prepared sizes, the quality of coal which the average consumer will buy, the price to the consumer at the bunkers in Seattle will be \$5.85. This is 30c. a ton cheaper than the same quality of coal was in August before the final order of the coal administrator. Adding to the bunker price an average of \$1.50 a ton for cartage (this may be less or more according to the distance hauled), the coal delivered will cost \$7.35 provided there is no packing for which a charge of 75c. a ton is made. This would make the coal cost \$8.10 a ton, as compared with \$8.15 a ton last August.

Furnace coal is now \$5.65 and \$5.75 a ton, compared with \$6 for both grades in August at the bunkers. The same delivery charges apply as for the prepared sizes.

(2) There is little probability that coal will be any cheaper in Seattle this year. Operators and miners of the state are now in dispute as to an increase in miners' wages and, if any increase is granted, this will be added to the price of coal to the consumer.

(3) There is some danger of a coal shortage in Seattle but more danger of considerable inconvenience due to the fact that consumers, waiting for lower prices as a result of Government control, have failed to put in the customary supply in advance. In the event of a sudden cold snap orders will come in so fast that the coal delivery facilities in the city could not take care of one day's orders in three weeks.

These three statements are based on the present status of the situation, the Seattle dealers and operators say, and they admit they do not know which way the situation will turn. One operator emphasized the fact that the price of coal will not go down any lower and there is a possibility that it may go up.

	Smokeless	West Va. Splint
Dom. lump.....	\$2.70@2.85	\$2.70@2.85
Steam lump.....	2.70@2.85	2.70@2.85
Egg.....	2.70@2.85	2.70@2.85
Small egg or nut.....	2.70@2.85	2.70@2.85
Mine-run.....	2.40@2.55	2.40@2.55
Screenings.....	2.20@2.35	2.20@2.35

# Current Prices—Materials and Supplies

## IRON AND STEEL

**PIG IRON**—Below are the present quotations, with a comparison of a month and a year ago:

CINCINNATI	Nov. 1, 1917	One Month Ago	One Year Ago
No. 2 Southern foundry....	\$33.00	....	\$18.90
No. 2 Northern foundry....	33.00	....	21.76
<b>NEW YORK</b>			
No. 2X Northern foundry....	34.25	....	22.00
No. 2 plain Northern foundry	33.75	....	21.00
No. 2 Southern foundry....	37.25	....	22.00
<b>BIRMINGHAM</b>			
No. 2 Southern foundry....	33.00	....	16.00
<b>CHICAGO</b>			
No. 2 Northern foundry....	33.00	....	22.00
No. 2 Southern foundry....	37.00	....	....
<b>PITTSBURGH</b>			
Bessemer iron*	36.30	\$36.30	24.95
Basic iron*	33.00	33.00	20.95

\*These prices include the freight charge from the valley to the Pittsburgh district. †Delivered Tidewater, New York.

Note—On Sept. 24 the President approved the new schedule of steel prices, that of pig iron being set at \$33.

**STRUCTURAL MATERIAL**—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	New York		San Francisco	
	Pittsburgh	Nov. 1, 1917	Nov. 1, 1917	Nov. 1, 1917
Beams, 3 to 15 in.	\$4.50	\$5.25	\$3.25	\$5.05
Channels, 3 to 15 in.	4.60	5.25	3.25	5.05
Angles, 3 to 6 in., 1/4 in. thick	4.50	5.25	3.25	5.05
Tees, 3 in. and larger	4.50	5.30	3.40	5.05
Plates	9.00	10.00	4.00	10.05

**BAR IRON**—Prices in cents per pound at cities named are as follows:

	Pittsburgh	St. Louis	Denver	Birmingham
Nov. 1, 1917	4.00	4.45	4.85	5.00

**NAILS**—Prices per keg from warehouse in cities named:

	Mill	Pittsburgh	St. Louis	Denver	Chicago	San Francisco	Dallas
Wire	2.70	\$2.70	\$4.00	\$4.00	\$4.45	\$4.60	\$4.50
Cut	2.70	2.70	5.00	5.00	4.60	6.15	....

**TRACK SUPPLIES**—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh		San Francisco	
	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	Nov. 1, 1917
Standard railroad spikes, 1/2-in. and larger	\$5.00 to 7.00	\$2.65	\$5.00	\$6.45
Track bolts	7.00 to 8.00	3.25	6.25	Premium
Standard section angle bars	3.50	2.60	4.50	Premium

**COLD DRAWN STEEL SHAFTING**—From warehouse to consumers requiring fair-sized lots, the following discounts held on Apr. 30, 1917:

	Cleveland	Chicago	St. Louis	Denver	Birmingham
List	+10%	+10%	+40%	+30%	+30%

**HORSE AND MULE SHOES**—Warehouse prices per 100 lb. in cities named:

	Mill	Pittsburgh	Chicago	St. Louis	Denver	Birmingham
Straight	\$4.75	\$7.00	\$5.50	\$7.75	\$6.25	....
Assorted	4.90	7.00-7.50	5.75	8.00	6.50	....

**CAST-IRON PIPE**—The following are prices per net ton for carload lots:

	New York		St. Louis		San Francisco	
	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago
4 in.	\$59.50	\$68.50	\$34.50	\$53.50	\$61.00	\$57.00
6 in. and over	56.50	65.50	31.50	50.50	58.50	54.00

Gas pipe and 16-ft. lengths are \$1 per ton extra.

**STEEL RAILS**—The following quotations are per 100 lb. f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh		Chicago	
	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago
Standard bessemer rails	\$38.00	\$33.00	\$38.00	\$33.00
Standard openhearth rails	40.00	35.00	40.00	35.00
Light rails, 8 to 10 lb.	83.00	50.00	83.00	43.00
Light rails, 12 to 14 lb.	82.00	49.00	82.00	42.00
Light rails, 25 to 45 lb.	75.00	47.00	75.00	40.00

Note—Re-rolled rails as valuable as new.

**OLD MATERIAL**—Prices per net ton in Chicago and St. Louis (including delivery to buyer's works and freight transfer charges):

	Chicago		St. Louis	
	Nov. 1, 1917	One Month Ago	Nov. 1, 1917	One Month Ago
No. 1 railroad wrought	\$28.50	\$36.00	\$29.00	....
Stove plate	15.50	17.25	10.00	....
No. 1 machinery cast	20.00	25.00	19.00	....
Machine shop turnings	15.00	17.00	14.00	....
Cast borings	14.25	17.00	12.00	....
Railroad malleable cast	24.00	30.00	24.00	....

**COAL BIT STEEL**—Warehouse price per pound is as follows:

	New York	Chicago	Birmingham	St. Louis	Denver
	\$0.12	\$0.09	\$0.17	\$0.15	\$0.14

**DRILL STEEL**—Warehouse price per pound:

	New York	St. Louis	New York	St. Louis
Solid	14c.	14 1/2 c.	Hollow	25c.

**PIPE**—The following discounts are for carload lots f.o.b. Pittsburgh, as per basing card of July 2, 1917, for iron pipe; May 1, for steel:

BUTT WELD			
Inches	Steel	Black	Galvanized
1/4 to 3	49%	35 1/2 %	33%
2 to 3	42%	29 1/2 %	28%
2 1/2 to 6	45%	32 1/2 %	28%
7 to 12	42%	28 1/2 %	28%
13 and 14	32 1/2 %	....	25%
15	30%	....	....
LAP WELD			
1/4 to 1 1/2	47%	34 1/2 %	33%
2 to 3	48%	35 1/2 %	....
EXTRA STRONG PLAIN ENDS			
2 to 3	40%	28 1/2 %	27%
2 1/4 to 4	43%	31 1/2 %	29%
4 1/2 to 6	42%	30%	28%
7 to 8	38 1/4	24 1/2 %	20%
9 to 12	33%	19 1/2 %	15%

From warehouses at the places named the following discounts hold for steel pipe:

	New York	Chicago	St. Louis
3/4 to 3 in. butt welded	38%	42%	34.27%
3 1/2 to 6 in. lap welded	18%	38%	21.27%
7 to 12 in. lap welded	10%	35%	21.27%

	New York	Chicago	St. Louis
3/4 to 3 in. butt welded	22%	27%	19.27%
3 1/2 to 3 in. butt welded	List	18%	13.27%
7 to 12 in. lap welded	List + 20%	20%	6.27%

Malleable fittings, Class B and C, from New York stock sell at list price. Cast iron, standard sizes, 15 and 5%.

## SHOP SUPPLIES

**NUTS**—From warehouse at the places named, on fair-sized orders, the following amount is deducted from list:

	New York		Cleveland		Chicago		St. Louis	
	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago
Hot pressed square	List	\$1.50	List	\$1.30	List	\$2.00	List	\$1.60
Hot pressed hexagon	List	1.50	List	1.20	List	2.00	List	1.60
Cold punched square	List	1.00	List	2.00	List	1.50	List	2.00
Cold punched hexagon	List	1.50	List	2.75	List	1.50	List	2.75

Semifinished nuts sell at the following discounts from list price:

	Nov. 1, 1917		One Year Ago	
New York	50%	50-10%	50%	50-10%
Cleveland	45%	50-10%	50%	50-10%
Chicago	50%	50-10%	50%	50-10%
St. Louis	40%	....	....	....

**MACHINE BOLTS**—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago	St. Louis
% by 4 in. and smaller	30%	35-5%	40-10%	35%
Larger and longer up to 1 in. by 30 in.	15%	25-5%	35-5%	25-5%

**WASHERS**—From warehouses at the places named the following amount is deducted from list price:

For wrought washers per 100 lb.:

New York	\$1.00	Cleveland	\$3.50	Chicago	\$4.00	St. Louis	\$2.25
----------	--------	-----------	--------	---------	--------	-----------	--------

For cast-iron washers the base price per 100 lb. is as follows:

New York	\$5.00	Cleveland	\$5.50	Chicago	\$3.50	St. Louis	\$2.75
----------	--------	-----------	--------	---------	--------	-----------	--------

**RIVETS**—The following quotations are allowed for fair-sized orders from warehouse:

	New York	Cleveland	Chicago
Steel 1/4 and smaller	30%	30%	40%
Tinned	30%	30%	40%

\*For less than keg lots the discount is 35%.

Button heads, 1/4, 3/8, 1 in. diameter by 2 in. to 5 in., sell as follows per 100 lb.:

New York	\$7.00	Cleveland	\$6.85	Chicago	\$5.50
----------	--------	-----------	--------	---------	--------

Coneheads, same sizes:

New York	\$7.10	Cleveland	\$6.95	Chicago	\$5.00
----------	--------	-----------	--------	---------	--------

## MISCELLANEOUS

**GREASES**—Prices are as follows in the following cities in cents per pound for barrel lots:

	Chicago	St. Louis	Birmingham	Denver
Cup	5 1/4	5.6	8	9 1/4
Fiber or sponge	6	5.9	11	15
Transmission	6	5.9	11	13
Axle	4	3.3	4	4
Gear	4 1/2	6	4 1/2	5 1/2
Car journal	3 1/2	3.75	4 1/2	4 1/2

**BABBITT METAL**—Warehouse prices in cents per pound:

	New York		Cleveland		Chicago	
	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago	Nov. 1, 1917	One Year Ago
Best grade	70.00	50.00	69.75	47.25	70.00	45.00
Commercial	40.00	25.00	21.00	17.00	25.00 to 30.00	19.00



**HOSE**—Following are prices of various classes of hose:

		Fire		50-Ft. Lengths	
				65c per ft.	
				40-10%	
		Air			
		First Grade	Second Grade	Third Grade	
		\$0.55	\$0.30	\$0.25	
		Steam—Discounts from list			
		First grade... 30%	Second grade... 30-5%	Third grade... 40-10%	

**LEATHER BELTING**—Present discounts from list in cities named:

	Medium Grade	Heavy Grade
Cincinnati .....	40%	35%
St. Louis .....	45%	40%
Denver .....	40%	45%
Birmingham .....	40%	35%
Chicago .....	30+10%	40+5%

**RAWHIDE LACING**—40% off list.**PACKING**—Prices per pound:

Rubber and duck for low-pressure steam.....	\$0.77
Asbestos for high-pressure steam.....	1.54
Duck and rubber for piston packing.....	.88
Flax, regular.....	.66
Flax, waterproofed.....	.99
Compressed asbestos sheet.....	.99
Wire insertion asbestos sheet.....	1.21
Rubber sheet.....	.55
Rubber sheet, wire insertion.....	.88
Rubber sheet, duck insertion.....	.44
Rubber sheet, cloth insertion.....	.25
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes.....	1.10
Asbestos wick, 1/2- and 1-lb. balls.....	.65 to .70

**WIRE ROPE**—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York	St. Louis	Chicago	San Francisco
Galvanized .....	10-2 1/2%	10-2 1/2%	10-2 1/2%	List
Bright .....	20-2 1/2%	20-2 1/2%	20-2 1/2%	15%

**MANILA ROPE**—For rope smaller than 3/4-in. the price is 1/4 to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: 3/4-in., 8 ft.; 1/2-in., 6 ft.; 3/4-in., 4 ft.; 1 in., 3 1/2 ft.; 1 1/4-in., 2 ft. 10 in.; 1 1/2-in., 2 ft. 4 in. Following is the price per pound for 3/4-in. and larger, in 1200-ft. coils:

Boston .....	\$0.35 1/2	Kansas City .....	\$0.33 1/2
New York .....	.34	Los Angeles .....	.33 1/2
Chicago .....	.33 1/2	Seattle .....	.33 1/2
Denver .....	.35 1/2		

**PIPE AND BOILER COVERING**—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard Thickness Per Lin.Ft.	Thickness	Price per Sq.Ft.
1-in.	\$0.27	1/2-in.	\$0.27
2-in.	.36	1-in.	.30
3-in.	.40	1 1/2-in.	.45
4-in.	.60	2-in.	.60
5-in.	.45	2 1/2-in.	.75
6-in.	1.10	3-in.	.90
8-in.	1.30	3 1/2-in.	1.05
10-in.			
85% magnesia high pressure.....			15% off
For low-pressure heating and return lines.....			4-ply... 58% off 3-ply... 60% off 2-ply... 62% off

**LINSEED OIL**—These prices are per gallon:

	New York	Cleveland	Chicago	St. Louis
	Nov. 1, 1917	Nov. 1, 1917	Nov. 1, 1917	Nov. 1, 1917
Raw in barrels.....	\$1.16	\$0.88	\$1.15	\$0.97
5-gal. cans .....	1.26	.98	1.25	1.07

**WHITE AND RED LEAD** in 500-lb. lots sell as follows in cents per pound:

	Red		White	
	Nov. 1, 1917	1 Year Ago	Nov. 1, 1917	1 Year Ago
	Dry	In Oil	Dry	In Oil
100-lb. keg .....	12.25	12.50	10.50	11.00
25- and 50-lb. kegs .....	12.50	12.75	10.75	11.25
12 1/2-lb. keg .....	12.75	13.00	11.00	11.50
1- to 5-lb. cans .....	14.25	14.50	12.50	14.50

**CALCIUM CARBIDE**—Price f.o.b. cars at warehouse points in Eastern States is \$102.50 per ton for Union miners' lamp carbide, and \$97.50 per ton for Cameo miners' lamp carbide. Union sells in 25-lb. cans for \$1.46 per can.

**COMMON BRICK**—The prices per 1000 in cargo or carload lots are as follows:

Cincinnati .....	\$13.50	Birmingham (clay) .....	\$7.50
St. Louis, salmon .....	8.00	Birmingham (shale) .....	8.50
Denver .....	8.00		

**FUEL OIL**—Price variable, depending upon stock. New York quotations not available owing to this fact. In Chicago and St. Louis the following prices are quoted:

	Chicago	St. Louis
Domestic light, 22-26 Baumé.....	5 1/4 c.	4 1/2 c.
Mexican heavy, 12-14 Baumé.....	7 c.	3 1/2 c.

**OIL**—Price per 50-gal. bbl. is as follows:

City	Fuel	Black	Red Engine	Steam Cylinder	Gasoline
Seattle .....	\$4.45	\$6.25	\$11.00	\$21.00	\$20.25
Los Angeles .....	1.45	6.50	12.00	26.00	10.00
Denver .....	3.25	8.75	17.00	24.00	12.00
St. Paul .....	3.00	5.50	11.00	17.00	10.05
Boston .....	3.50	10.50	15.00	20.50	12.50
Kansas City .....	7.20	5.20	10.50	17.85	10.15

Note—Standard prices of oil are necessarily difficult to give. Those above are for average grades.

**PREPARED ROOFINGS**—Standard grade rubbered surface, complete with nails and cement, costs per square as follows in New York and Chicago:

	1-Ply	2-Ply	3-Ply
	c.l.	c.l.	c.l.
No. 1 grade.....	\$1.15	\$1.40	\$1.45
No. 2 grade.....	1.10	1.25	1.40
Asbestos asphalt-saturated felt (14 lb. per square) costs \$6.50 per 100 lb.			
Slate-surfaced roofing (red and green) in rolls of 108 sq.ft. costs \$1.85 per roll in carload lots and \$2.10 for smaller quantities.			
Shingles, red and green slate finish, cost \$4.75 per square in carloads, \$5 in smaller quantities, in Philadelphia.			

**ROOFING MATERIALS**—Prices per ton f.o.b. New York or Chicago:

	Carload Lots	Less Than Carload Lots
Tar felt (14 lb. per square of 100 sq.ft.).....	\$61.00	\$62.00
Tar pitch (in 400-lb. bbl.).....	15.00	16.50
Asphalt pitch (in barrels).....	29.00	30.50
Asphalt felt .....	60.00	62.00

**STEEL SHEET PILING**—The following price is base per 100 lb. f.o.b. Pittsburgh, with a comparison of a month and a year ago:

	Nov. 1, 1917	One Month Ago	One Year Ago
\$4.50 to \$5.00 .....	\$4.50 to \$5.00	\$2.60 to \$2.70	

**HOLLOW TILE**—The price per 1000 in carload lots f.o.b. mine is as follows:

	4 x 12 x 12	8 x 12 x 12
St. Louis .....	\$79.00	\$135.00
Denver, per ton .....	110.00	200.00
Kansas City .....	58.00	112.00
St. Paul .....	55.00	138.00
Boston .....	95.00	171.00

**LUMBER**—Price of yellow pine per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft.	2-In. T. and G.	8 x 8 In. x 20 Ft.
St. Louis .....	\$36.50	\$27.00	\$35.50
Birmingham .....	25.00	30.00	22.00

## Price per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft.	2-In. T. and G.
	Y.P.	Y.P.
Kansas City .....	\$41.00	\$42.50
Seattle .....	21.00	21.00
Los Angeles .....	30.00	30.00
Denver .....	30.00	30.00

	8 x 8-In. x 20 Ft. and Under	12 x 12-In. 20 Ft. and Under
	Y.P.	Y.P.
Kansas City ..	\$41.00	\$33.00
Seattle .....	21.00	21.00
Denver .....	30.00	27.50

Note—Boston lumber market demoralized.

**COPPER WIRE**—Prices per 1000 ft. for rubber-covered wire:

	Denver		St. Louis		Birmingham	
	Single	Double	Single	Double	Single	Double
No. 14 .....	\$12.25	\$15.20	\$29.75	\$13.50	\$18.00	\$15.40
10 .....	24.50	27.70	54.95	27.25	30.10	30.80
8 .....	34.90	38.50	76.80	38.45	42.45	42.85
6 .....	59.10	...	65.35	...	69.60	74.10
4 .....	85.15	...	93.65	...	101.75	106.55
2 .....	127.50	...	140.50	...	156.50	163.40
1 .....	165.35	...	182.50	...	201.00	209.50
0 .....	198.55	...	241.50	...	276.00	285.00
000 .....	267.05	...	294.50	...	317.00	330.00
0000 .....	327.35	...	360.50	...	417.40	478.50
	399.60	...	439.50	...	508.00	516.50

**EXPLOSIVES**—Price per pound in 200-lb. lots at cities named:

	Low Freezing	40%	Gelatin	80%	Black Powder*
	20%		60%		
New York .....	\$0.27 1/2		\$0.34 1/2		\$2.50
Boston .....	.26 1/4		.36 1/4		.43 1/4
Kansas City .....	.20		.26 1/4		.33 1/4
Los Angeles .....	.20		.27		.35
Seattle .....	.18 1/2		.24 3/4		.31 3/4
Chicago .....	.19 3/4		.23 3/4		.33
St. Paul .....	.20		.26 1/4		.33 1/4
St. Louis .....	.16 1/2		.20 1/2		.29 1/2
Denver .....	.19		.23 3/4		.32 3/4
Dallas .....	.25		.29		.39

\*75%.

**FREIGHT RATES**—On finished steel products in the Pittsburgh district, including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, bolts, flat sheets (except planished), chains, etc., the following freight rates are effective in cents per 100 lb.:

Baltimore .....	15.4	Minneapolis .....	32.9
Boston .....	18.9	New Orleans .....	30.7
Buffalo .....	11.6	New York .....	16.9
Chicago .....	18.9	Pacific Coast (all rail).....	75.0
Cincinnati .....	15.8	Philadelphia .....	15.9
Cleveland .....	10.5	St. Louis .....	23.6
Denver .....	68.6	St. Paul .....	32.9
Kansas City .....	43.6		